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Skeptical Inquirer

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Volume 24, No. 5 • September/October 2000

SPECIAL REPORT

Voodoo Science and the Belief Gene

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Ear Cones and Candles

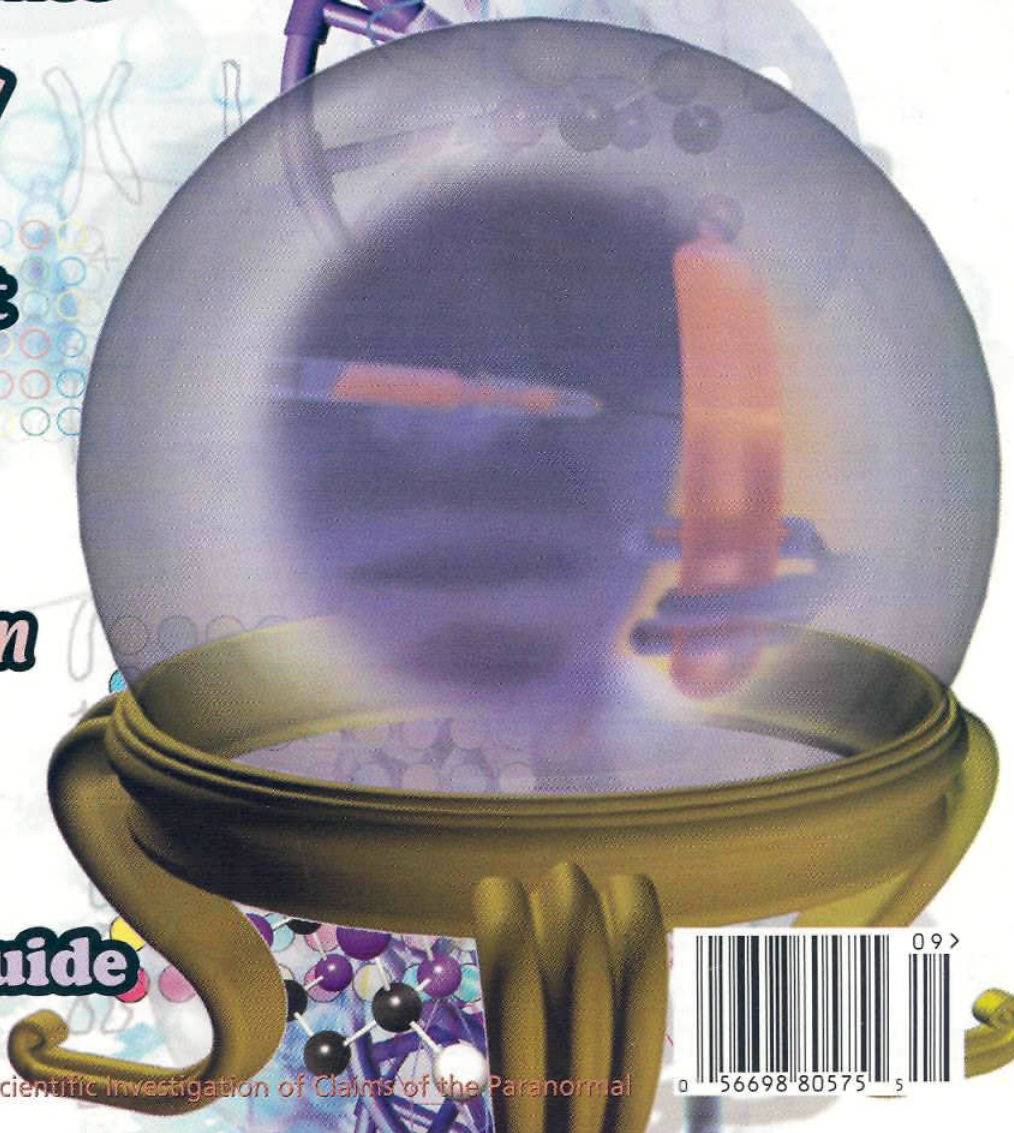
The Pseudoscience of Rogerian Nursing Theory

The Psychic Staring Effect

Spiritualist Medium Responses

Astrology's Sun Sign Columns

The Laws of Nature: A Skeptic's Guide



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EDITOR'S NOTE

Voodoo Science, and Giving Astrologers A Final Chance

Physicist Robert Park had already had a good career as a physics professor when he gained some national following in the past decade among scientists and science writers with his weekly "What's New" electronic newsletter distributed Fridays from the Washington office of the American Physical Society. From there he has a fine vantage point for watching the foibles of those who seek to warp science for their own political agendas or attract public policy support for all manner of semiscientific or pseudoscientific schemes, from alternative medical fads to free-energy machines. Now his new book *Voodoo Science* has thrust him into the public eye. It draws upon his knowledge of physics, understanding of Washington politics, and wry outlook to explore the four aspects of what he calls voodoo science: *pathological science*, in which scientists fool themselves; *junk science*, in which people try to befuddle jurists or lawmakers with tortured theories of what *could* be so rather than what *is* so; *pseudoscience*, where there is no evidence but the language and symbols of science are used; and *fraudulent science*, where honest error has evolved from self-delusion to fraud.

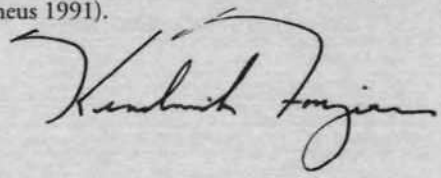
Our commentator on *Voodoo Science* in the July/August 2000 issue, Gerry Rising, titled his review "Our Man in Washington." *Our* might refer to the scientific community, to skeptics, and to others who respect science and reason. I don't think any of the proponents of what I call fringe science are going to think of Park as *theirs*! (My own review of *Voodoo Science* will appear in a forthcoming issue of *Physics Today*.)

Our lead article in this issue was adapted by Park from chapter two of *Voodoo Science*. He asks: How do people decide what to believe? And why do some believe while others doubt? Along the way, he uses specific examples to illuminate differences between pseudoscience and genuine scientific disputes.

* * *

Geoffrey Dean and Arthur Mather report in this issue the results of their invitation to astrologers and scientists to propose new kinds of tests that once and for all would resolve whether there is any validity at all to sun sign columns—the "horoscope" columns in newspapers and magazines that most people think of as astrology. Empirical tests to date have shown, as they say, "a clear and consistent denial of validity." Many astrologers agree, saying that horoscope columns have nothing to do with "real" astrology. Yet other astrologers maintain that they have some value. The issue has been debated within astrology journals for forty years. Dean and Mather decided to give astrologers one final chance. They sent out written and Internet invitations to several thousand astrologers and others to propose tests of the validity of sun sign forecasts and delineations. And they gave the leading astrological organizations in seven countries a chance to comment, allowing two years for that process. The results are reported in their article. Briefly, nothing was suggested to cause anyone to change the conclusion that sun sign astrology is not valid.

And in case you are wondering why the Dean and Mather article doesn't examine the so-called "real" astrology I mentioned above—been there, done that! Geoffrey Dean himself published two earlier articles in the SKEPTICAL INQUIRER (Winter 1986–87 and Spring 1987) that were widely heralded as one of the most thorough critical examinations of astrology ever done. They also appear in updated form with his responses to critics in the SKEPTICAL INQUIRER anthology *The Hundredth Monkey* (Frazier, Prometheus 1991).



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Dowsing for Truth: Report on Tests of a California Wire-Dowser

The Independent Investigations Group (IIG) at the Center for Inquiry-West conducted an informal experiment May 27 to determine if a man (we'll call him Frank) has the ability to detect copper wire with two L-shaped dowsing rods. Frank claimed to be a skeptic, which piqued our interest, and also claimed that not only could he find hidden wire or plastic with great accuracy, but he could also teach us how to do likewise.

After consulting with CSICOP Fellow Ray Hyman in Eugene, Oregon, we designed an experiment wherein we would conceal 4-foot lengths of 16-gauge wire in long (approximately 5 foot) tubes of rolled up newspaper. Frank would pass over twenty-five of these tubes and determine whether or not each contained a piece of wire. We would give him five separate passes over the set of tubes. The wires would be changed between tries. In order to keep the experiment double blind, the person placing the wires would not be present during Frank's attempts, and the observers would not be present during the placing of the wires.

None of this happened as planned. When Frank arrived, he asked if he would be able to walk on top of the rolled-up newspapers. Since the newspapers were thin and the wire was relatively thick, we decided that Frank would be able to feel the wire through his shoe, and asked him if he could just straddle the tubes. Frank then informed us that he would not be able to perform in this environment (i.e., in the meeting room at the Center for Inquiry–West) because there was too much interference from pipes and electricity surrounding the room.

So we moved the whole kit and caboodle out to the parking lot—first in one spot, then in another—to a place which Frank had dowsed and "cleared" before we placed the tubes. (Hyman had warned us to be ready for excuses!) Frank suddenly decided that his dowsing rods were detecting the paper from the rolled up newspapers. So we asked him to dowse a patch of parkway grass across the street while we looked for a carpet in the building.

Frank happened to have some 12-gauge wire, which he said he could detect.

This thinner wire appealed to our sense of fairness. After Frank cleared an area of grass, a few of us (one barefooted) tried to determine where a hidden wire was underneath the carpet. We were satisfied that one could not feel such a wire.

We placed grid markings along the x and y axes of two rectangular carpets for the purpose of recording Frank's guesses, and also videotaped the entire process. All the observers (and Frank) stayed indoors while the placer hid the wire and recorded its location on the grid. The placer then left before we returned with Frank.

Frank agreed that he would be able to tell us the direction in which the wire laid, and be able to detect where the wire was within a few inches of its location. Frank made six guesses of specific wire locations and never came within three or four feet of the wire's actual location, even after we lifted the larger carpet once and gave him a second guess on the smaller one.

We learned three things: 1) Frank does not seem to be able to detect hidden copper wire with dowsing rods with any accuracy; 2) Be flexible! Many people who make paranormal claims have an array of excuses why your experimental test will prevent them from getting accurate results. Always confirm with them before beginning the actual test that all conditions are satisfactory. This gives them as little wiggle room as possible; and 3) Anyone (with a little help) can test a claim of the paranormal if you know what to look for.

(Thanks to IIG members Brian Kornfeld, Sherri Andrews, Jim Thomson, Keith Jeffreys, Vaughn Rees, Milt Timmons, and Robin.)

—James Underdown

James Underdown is the Executive Director of the Center for Inquiry–West in Los Angeles.

New York Jury Finds Alternative Medicine Doctor Negligent in Patient's Death

Following the death of a patient with Hodgkin's disease, a jury ordered Dr. Nicholas J. Gonzalez to pay the patient's husband $282,000. Gonzalez told Hollace Schafer, a college music professor, that he could diagnose the state of her cancer and recommend appropriate treatment by simply testing her hair.

A jury found Gonzalez negligent for not arranging proper diagnostic measures, contributing to her death. Instead of conventional treatments, Schafer was given vitamins, purges, animal tissue extracts, enzymes, and four to ten coffee enemas per day. Gonzalez was found 49 percent liable for Schafer's death.

Schafer was first diagnosed with cancer in 1977 and had twice been treated with chemotherapy. Both times the cancer went into remission, but when the cancer came back a third time she sought treatment from Gonzalez. The doctor's unconventional cancer therapy was the subject of an ABC news special and a segment on the CBS newsmagazine *48 Hours*.

This is not the first time that Gonzalez has been found negligent for treating patients with alternative medicine instead of conventional therapy. In 1997, a jury ordered Gonzalez to pay the family of Julianne Charell more than $2 million because of his unorthodox treatment of her uterine cancer.

—Benjamin Radford

Benjamin Radford is managing editor of the SKEPTICAL INQUIRER magazine.

American Chemical Society Honors Walter McCrone, Cites Work on Shroud of Turin

Walter C. McCrone received well-deserved recognition when he was awarded the American Chemical Society Award in Analytical Chemistry at the ACS annual meeting in San Francisco, March 26, 2000. The award was given for Dr. McCrone's groundbreaking work in chemical microscopy, specifically citing his work on the Shroud of Turin. McCrone showed that the shroud is a piece of medieval artwork produced by painting red ocher and vermilion pigment onto linen with collagen tempera. His prediction of a fourteenth-century origin for the shroud was proven correct by carbon dating. The award nomination was written by David Stony, Director of the McCrone Research Institute in Chicago, who wrote that McCrone's work on the shroud "is an excellent example of the use and application of his methodology, the necessity for the ultramicroanalytical approach, and of McCrone's character." The award is sponsored by Fisher Scientific Co. Further details can be found at www.mcri.org.

The McCrone Institute continues to be the premier source of training for chemical microscopy in the world. At a recent course in polarized light microscopy, the highlight of the week was the final lecture given by McCrone himself on his work on the Shroud of Turin and the Vineland Map. Although now in his eighties, McCrone's mind is still sharp as a knife. With no difficulty he recited complex technical details of his analysis from memory. McCrone, a CSICOP Fellow, is obviously hurt by the vicious criticism the shroud proponents have heaped on him, but he remains congenial and modest. A typical comment was "I didn't find any blood on the shroud, but the STURP (Shroud of Turin Research Project) members all disagreed with me, so I guess I must be wrong." To the contrary, McCrone's evidence is clear and convincing.

—Bill Vanderlinde

William Vanderlinde, Ph.D., is an engineering failure analyst in Columbia, Maryland, and a member of the National Capital Area Skeptics. He recently co-authored a paper on microscopic methods with McCrone Institute Director Dave Stoney.

New Age 'Rebirthing' Treatment Kills Girl

A ten-year-old girl undergoing an unproven New Age therapy suffocated on April 18 in Evergreen, Colorado. Connell Watkins, an unlicensed and unregistered therapist, along with three others, wrapped Candace Newmaker completely in a flannel blanket, twisted the ends together, and placed large pillows around her head. The session lasted over half an hour, and when the blanket was unwrapped, Candace was lying in vomit and no longer breathing.

A videotape of the episode revealed that the girl cried out at least a dozen times that she couldn't breathe, had to vomit, and was going to die. According to investigators, therapists pushed against her with pillows and said, "You want to die? Okay, then die." Julie Ponder, who led the session, claimed that she didn't know Candace was having problems. Jeane Newmaker, Candace's adoptive mother, watched from a nearby room.

Watkins, along with four other people including Newmaker, was charged with criminally negligent child abuse resulting in death. In seeking help for her daughter's depression and attention deficit disorder, Newmaker turned to Watkins after finding little success with traditional treatments. Watkins charged $7,000 for an intensive two-week therapy session that included "rebirthing."

Rebirthing therapy was founded by therapist Leonard Orr in the 1970s, who is said to have re-experienced his own birth while taking a bath. This led him to develop breathing exercises that would supposedly release repressed traumas. In the form of rebirthing practiced by Watkins, the blanket was said to represent the womb, and the pillows were pushed to simulate labor contractions. Struggling out of the blanket was supposed to help the child heal from past trauma by being "reborn."

Terry Levy, co-founder of an Evergreen clinic, admitted that there is "a lack of proper training, credentialing, and regulation in this field." A spokeswoman for the American Psychological Association went much further: "There is absolutely no evidence that this works, that it helps people. This is far outside what mainstream psychotherapists are doing."

In the wake of the child's death, the

Colorado Mental Health Grievance Board barred Watkins from practicing further rebirthing therapy. This is not the first time that a child has suffocated while in therapeutic restraint: Two other children vomited and suffocated to death since 1993.

—Benjamin Radford

Magnet Therapy Update: Support for Your Feet, but Little Support from Science

On June 12, magnet therapy took another step into the mainstream footwear industry. Capitalizing on the success of its MagneForce golf shoes, Florsheim Group Inc. expanded the brand with a new series of magnetic-insole dress and walking shoes.

While the companies that make magnetic therapy products widely advertise claims of pain relief and other health benefits, the scientific evidence to back these statements up is scanty. On its Web site (www.florsheim.com), Florsheim lists a variety of health benefits attributed to magnets, including improved blood flow and internal pH balance, and the correction of "possible . . . magnetic deficiency." Isolated studies, such as the Baylor College of Medicine clinical trial, indicate that magnets may relieve pain, but many others show that magnets do not.

In particular, a study published in the January 1997 issue of the *Journal of the American Podiatric Medical Association* showed no difference in pain relief between magnetic and non-magnetic insoles. On March 8, 2000, the *Journal of the American Medical Association* (*JAMA*) published a clinical trial that also failed to find any therapeutic benefit in magnetic belts for back pain.

Florsheim states that the MagneForce designers "were cautious at first, but worked extensively with Magnetherapy, Inc."—a Florida-based company that produces a line of magnet therapy products called Tectonic. The shoe manufacturer cites testing by Tectonic and a report prepared by Magnetherapy to vouch for its magnetic insoles.

In 1998 Texas Attorney General Dan Morales filed an Assurance of Voluntary Compliance (AVC) against Magnetherapy, Inc. with the Dallas County State District Court. According to its press release, the Texas Office of the Attorney General required the company to "stop making claims that the magnets can cure, treat or mitigate any disease or that they can affect [*sic*] any change in the human body" without approval from the FDA. The order also required the company to "withdraw false labeling and advertising from the marketplace within 120 days" and pay a $30,000 penalty to the Office of the Attorney General to reimburse the state for legal and investigative fees.

Various ads claimed that Tectonic magnet therapy products would provide relief from certain painful conditions and could restore range of motion to muscles and joints. The company had provided retailers with display packages that included health claims, written testimonials, and posters of sports stars.

—Kevin Christopher

Kevin Christopher is Public Relations Director for CSICOP.

Miraculous Elián

A cause celebre in both the United States and Cuba, young Elián Gonzalez is also being portrayed as a miracle child.

One of three survivors of a risky attempt to reach the Florida coast in a leaky boat—a mission that claimed the lives of his mother, stepfather, and several others—the little boy is being hailed by many Cuban exiles as a divine messenger. One of his rescuers, Donato Dalrymple, who with a cousin pulled Elián from the sea, speaks of the boy's survival as "this miracle."

"Pescador, Pescador!" ("Fisherman, Fisherman!"), the exiles chanted to Dalrymple, an appellation that seemed to take on "a saintly quality" as one reporter observed. (No doubt many recalled Jesus' invitation to the fishermen Peter and Andrew to follow him and become "fishers of men" [Matthew 4:19].) But Dalrymple is not a fisherman. He is a housecleaner who had reluctantly agreed to drive his cousin's boat that Thanksgiving Day. Two days later he summoned television cameras to cover his visit to the home of the boy's Miami relatives, where he became a fixture. His cousin now labels him "a phony, a liar," and "a desperate man looking for publicity."

In time the swordfish that the two cousins had seen leaping near the boy—which Elián thought were dolphins—took on a mythic character. Dolphins are anecdotally associated with rescues of downed fliers, and soon stories were told of the aquatic mammals having "propped him up when he was about to drown" (actually he was buoyed by an inner tube) or of saving him "from the jaws of sharks." The *National Review* lamented the "mockery" accorded "this little fable" and observed that "Liberals have their own superstitions."

Selectively magnifying the positive and ignoring the negative, one miraculist touted the claim that Elián had escaped being sunburned at sea, while ignoring the significant fact that, at the same time, the child had tragically lost his mother. In fact, Elián was treated at the Joe Dimaggio Children's Hospital for "sunburn and dehydration."

As Elián began to be portrayed as "a miracle boy," some exiles drew parallels between the six-year-old and the biblical infant Moses. They noted that each had been set adrift for protection—Moses from the pharaoh Ramses II (Exodus 1:11–2:10), who had commanded the killing of Israelite male infants, and Elián from Fidel Castro. The *Miami Herald* reported that Elián's great-uncle Lazaro Gonzalez had sent a

note to a nun claiming that the Cuban dictator wanted the child for human sacrifice, a claim also made in an anonymous letter disseminated by Spanish-language radio.

The assertion was that Castro—otherwise a "godless Communist"—practices the Cuban folk religion, Santeria. Like Haitian Voodoo, this is a mixture of Catholicism and African polytheistic magic. One Santeria priest claimed that whoever possessed little Elián would gain protection against illness and even death. A Santeria priestess who lives across the street from the Gonzalezes claimed that "Elián is the son of Eleggua," the Santeria guardian of doorways and passages. An exiled Cuban writer also saw the boy as a divine Eleggua and insisted that keeping him in Miami would cause the fall of Castro.

As the boy's Miami relatives and others sought to keep him from his father and thereby from the despised Castro, other miraculous signs were claimed. There were at least two reported sightings of the Virgin Mary, first in a stain on a Little Havana bank window (apparently caused by mineral residue from sprinkler water), although not everyone could discern the Virgin's features in the "cloudlike" stain. Another supposed image was reported in a "mysterious marking" on a mirror in the Gonzalez home.

Outside the house, CNN showed scenes of Elián—looking as if he would much rather be doing something else—being held up to the fence so he could touch the rosaries of the adoring faithful. One night thousands in the center of Little Havana assembled to form a human cross and to mix chants with prayers. "Needless to say," the *Washington Post* commented, "the case has taken on the feeling of a religious crusade."

—Joe Nickell

Joe Nickell, CSICOP's Senior Research Fellow, is author of Looking for a Miracle.

Paranormal Radio Is Alive and Well After Art Bell's Departure

It seems like only yesterday that Art Bell had announced he was leaving talk radio. At the time of his announcement, it was hard to believe that Bell was actually leaving—both because he chose April Fool's Eve and Day to release his decision, and because he had already "left the business" briefly in October 1998.

It's ironic that Bell cited the very thing on which his radio show has often thrived as one of the reasons that drove him out of the business. After years of feeding the nation's appetite for sensational rumors about UFO cover-ups and the like, Bell himself fell victim to the groundless accusation that he is a child molester: This claim particularly traumatized Bell because his own son, Art Bell IV, was sexually assaulted by a teacher in 1997.

Bell's departure is the end of an era, but not the end of "Coast to Coast AM." In May, Seattle-based radio talk show host Mike Siegel, who had filled in for Bell as host before, was selected as his replacement.

Siegel, a 25-year veteran of radio, began as host on "Coast to Coast AM" on April 27. According to the *Seattle Times*, Siegel previously worked at KRKO-AM and KVI-AM, where he was fired in 1996 for airing an unsubstantiated rumor about then-mayor Norm Rice. The rumor—which spread like wildfire through conservative talk radio—was that Rice had been shot by his wife when she discovered him in a sex act with his male deputy mayor.

Art Bell promised that Siegel would maintain the format and standards of Coast To Coast AM. So far, the new host has been faithful to the program's tradition as the premiere venue of paranormal and pseudoscience claims. Recent guests include UFOlogist and physicist Stanton Friedman (known as the "Father of Roswell"), Dr. Larry Dossey, who claimed scientific evidence for healing prayer in his 1993 book *Healing Words*, and Steve Gibbs, crank inventor of the "Hyper-Dimensional Resonator" the latest in time travel technology.

—Kevin Christopher

'Miracle Staircase' Carpenter Finally Identified

There is an important new development in the case of the "miracle" stairway of Loretto Chapel in Santa Fe, New Mexico. Although it has been shown that the beautiful staircase's construction is less than miraculous (see my "Investigative Files" column, SKEPTICAL INQUIRER, November/December 1998), the identity of the nineteenth-century artisan had been lost. Some imaginative nuns had come to believe that it was St. Joseph himself, the father of Jesus and patron saint of carpenters.

Now in an article in the January 2000 *New Mexico* magazine—"Loretto Staircase Mystery Unravels" by Tamar Stieber—the identity of the enigmatic

craftsman has been revealed. Credit for the discovery goes to an "intrepid and highly respected amateur historian" named Mary Jean Cook. She learned of a "hermit rancher," François-Jean "Frenchy" Rochas, who lived in "godforsaken" Dog Canyon, nine miles from Alamogordo. Learning that he had left behind a collection of "sophisticated carpentry tools," Cook searched for his death notice, which she found in the January 6, 1896, issue of *The Santa Fe New Mexican.*

It described Rochas's murdered body being found at his isolated rock cabin and described him as "favorably known in Santa Fe as an expert worker in wood." He had built, the brief obituary noted, "the handsome staircase in the Loretto chapel and at St. Vincent sanitarium."

Cook suspects the legend of St. Joseph began with the sisters at the Loretto Academy, "probably in response to questions from their students." However, she observes that "it wasn't until the late 1930s—when the story appeared in *Ripley's . . . Believe It or Not!*—that the story became an icon of popular culture."

Although some rued the debunking of the pious legend, Archbishop Michael Sheehan promised: "It will always be referred to as a miraculous staircase. It was an extraordinary piece to have been done in its time."

—Joe Nickell

'I Speak to Dead People': Medium John Edward Hosts SciFi Cable Show

John Edward, psychic medium and author of the book *One Last Time: A Psychic Medium Speaks to Those We Have Loved and Lost*, is host of "Crossing Over with John Edward," a new show on the SciFi cable channel, airing weekdays at 4 P.M. and 11 P.M. "Crossing Over" is a monstrous hybrid of talk show and psychic fair, spliced with the look and sound of a 900-line infomercial.

Edward claims to have a direct line to the spirit world, but seems to always be the one asking the questions. An objective look at the dialogue reveals the techniques of cold reading. According to Ray Hyman, "'Cold reading' is a procedure by which a 'reader' is able to persuade a client whom he has never before met that he knows all about the client's personality and problems. At one extreme this can be accomplished by delivering a stock spiel, or 'psychological reading,' that consists of highly general statements that can fit any individual." At its best, a cold reading gives the subject being read an assessment uniquely tailored to him or her. (For more on this topic, see Peter Greasley's article "Management of Responses in a Spiritualist Medium Consultation," in this issue.)

Edward throws out vague bits of bait that could apply to almost anyone and hooks his subjects into supplying him with all of the specific answers. A reading of one member of the audience is representative of the reading dialogue throughout the program (parenthetical remarks are mine):

> Edward: "I have a male that's older than you." (Is there any human being on the planet that doesn't have some—any—relationship to an older male?)
> Subject (eagerly): "Yes. Yes."
> Edward: "Who's passed?" (Isn't that the point?)
> Subject: "My father-in-law."
> Edward: "OK, thank you. 'Cause I was going to say it's got to be a father figure." (Yeah, right.)

The reading dialogues in "Crossing Over" are sometimes hilarious. The centerpiece interview of the first episode is between Edward and actress Linda Dano, star of the soap opera *Another World.* Here is a small excerpt:

> Edward (continuing on the subject of Dano's grandmother): "I'm getting 'Bo-bo.'"
> Dano (perplexed): "Bo-bo?"
> Edward: "Like two 'b's. 'b-b'" (Dano is not making a connection with any human she knows.) "Wouldn't be a dog, would it?"
> Dano: "Beebee?"
> Edward: "Passed?"
> Dano: "Yes!" (Dano pauses and a look of amazement crosses her face.) "No! I had a dog named 'Beebee'!"
> Edward: "Passed?"
> Dano: "You get dogs?"

Of course he gets dogs. That might just be because Dano didn't call either of her grandparents "Bubbi"; there's probably no one in her family named Robert, Roberta or Bobbi; and presumably neither Dano, nor anyone in her family, cared much for Bobo the Clown.

You can almost forgive John Edward for what he does because his subjects are—literally—asking for it. They want and expect to connect with their deceased family members. In fact, the "Crossing Over with John Edward" Web page at www.scifi.com/johnedward clearly lays out "John's Rules" for visitors who are thinking about being a guest:

> By entering the stage area, you're agreeing to be "read" by John. John cannot control who "comes through." So there are no "passive audience members." For instance, John has read the cameraman, soundman, and someone in the next room during rehearsals. If you feel you'll be too embarrassed, too frazzled, or just not interested, we ask that you give up your seat to someone who's anxious for a reading.

Edward gives words of advice at the close of the show: "You always want to retain a healthy sense of skepticism, so this way you can learn and understand what's happening." This appeal is infuriating coming from the host of show that thrives on mystery and relies on credulous and obliging guests and audience.

Ray Hyman's article, quoted and paraphrased in this review, can be found in the Spring/Summer 1977 issue of the *Zetetic* (SKEPTICAL INQUIRER).

Joe Nickell discusses John Edward's readings in depth in his September 1998 *Skeptical Briefs* Investigative Files column, "Investigating Spirit Communications," available online at www.csicop.org/sb/9809/i-files.html.

—Kevin Christopher □

Fund for the Future

CSICOP AT THE CENTER FOR INQUIRY

CFI-International
Amherst, N.Y.

Promote CSICOP

Using the Media & Telecommunications to Promote Science and Reason

The Fund for the Future is a capital campaign to provide CSICOP with the resources needed to more effectively influence media and public opinion. The 90s were defined by a telecommunications revolution, along with an explosion of misinformation available to the scholar and citizen alike. The hunger for superstition, pseudoscience, the paranormal and miraculous solutions has never been more acute.

The Ten-Year Plan

CFI-Midwest
Kansas City, Mo.

Contributions are needed for current priorities:

- Increased media appearances by skeptical spokespersons
- Press releases, opinion pieces and media alerts
- Greater exposure through the Internet, including webcasting
- National initiatives coordinated by the Council for Media Integrity
- Instructional materials introducing skepticism to elementary and secondary school students
- Video production

How Can You Help?

CFI-West
Los Angeles, Ca.

CSICOP has established its expertise and integrity. It's time to command more media attention and a larger audience. The Center for Inquiry Fund for the Future is about new methods of outreach and broader influence, and is driven by an ambitious ten-year strategic plan for growth.

We depend on the support of readers and friends to continue leading the international skeptical movement. Gifts to the Fund for the Future provide the resources we need to respond to today's challenges.

All gifts are gratefully accepted. The Fund for the Future welcomes gifts of encouragement and major investments.

Cash contributions and gifts of stock are needed for immediate growth and new initiatives. We also offer a range of planned giving opportunities, from bequests to assorted tax-advantaged trusts and pooled funds. Planned gifts support our work in the future and can provide an income stream for you and a beneficiary. You may also make a gift supporting the general endowment, or establish a special purpose fund underwriting a long-term project that expresses your personal interests and commitment to skepticism.

In today's stock market, gifts of highly appreciated securities offer particular advantages to the donor. When donating stock to a charitable organization, you avoid taxes and maximize the impact of the asset you are donating.

Contact Anthony Battaglia at (716) 636-7571 ext. 311 or via e-mail at CFIANTHONY@AOL.COM to discuss accomplishing your philanthropic and financial goals and contributing to the Fund for the Future.

Bill Nye "The Science Guy," Joe Nickell, and entertainer Steve Allen appear on a radio show.

CSICOP
at the Center for Inquiry
P.O. Box 703
Amherst, NY 14226-0703
(716) 636-1425 ext. 311
Fax (716) 636-1733

Co-chairs of the Fund for the Future Campaign: above, author and TV personality Steve Allen; below, author and critic Martin Gardner.

Council for Media Integrity

Formed just weeks after its inclusion in the Ten-Year Plan, the Council for Media Integrity monitors and challenges media programs that convey unfounded claims and mislead the public about science. Members include Steve Allen (co-chair), E. O. Wilson, Stephen Jay Gould, and many others. CSICOP will invest in electronic infrastructure to facilitate rapid response to irresponsible programs.

Enhanced Library Resources

The Center for Inquiry's skeptics' library—already the finest of its kind in the world—needs additional funding to enlarge its core collection and add electronic media. Worldwide modem access to the library's catalog is already nearly complete.

Adult Education

The Council cosponsors the Center for Inquiry Institute, which has already expanded its offerings to include a new three-year certificate program in science and skepticism. Courses are scheduled in Amherst, Los Angeles, and other cities.

Regional Outreach

With the establishment of The Center for Inquiry–West (Los Angeles), The Center for Inquiry–Midwest (Kansas City) and The Center for Inquiry–Rockies (Boulder, Colorado), giant steps have been taken to enhance direct field service to skeptical activists. Additional regional centers are planned, with expanded calendars of activities.

Focusing Upon the Young

To present the skeptical message more compellingly to the young, CSICOP will develop new materials—ranging from age-appropriate print publications to audio and video cassettes and instructional coursework. Goals include enhanced understanding of science and improved critical thinking skills.

On Ear Cones and Candles

Three experiments by the authors melt a New Age claim of ear wax extraction.

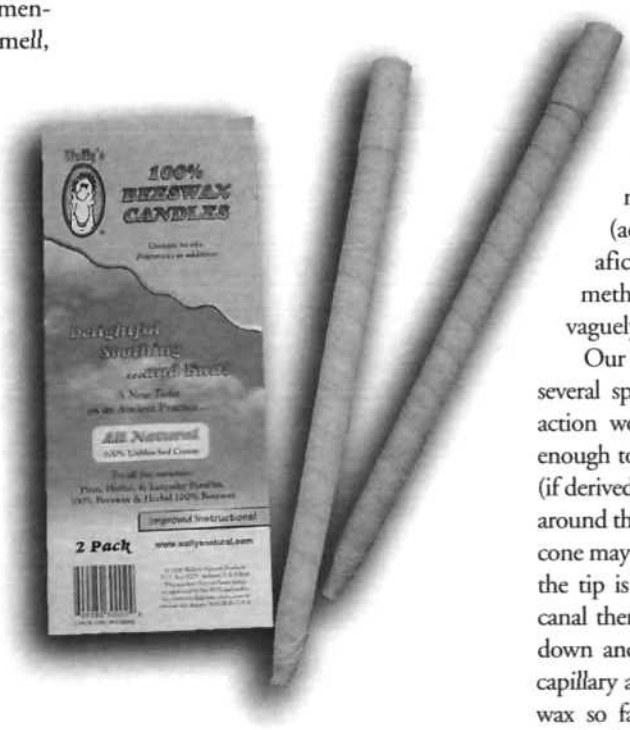
PHILIP KAUSHALL and JUSTIN NEVILLE KAUSHALL

The advertisement's banner headline read "Chinese and Egyptian Ear Coning." The technique is not described, but the benefits claimed include "debris removal from nerve endings," "detoxification of sinuses and lymph system" and "sharpening of mental functioning, vision, hearing, smell, taste and color sensation." Ear coning appointments are accepted and cone making classes are offered. The telephone number given is in Los Angeles.

We had heard about ear cones from a friend who had waxed enthusiastic about how ear wax would drawn out from his ears and he would feel light headed and his sinuses clear. He introduced us to the technique. Ear cones are available in New Age or "head" shops. From a store in Venice (California) we bought some for $2.50 each.

An ear cone is made out of a thin layer of bees wax. The sheet is curled into a cone shape with the tip aperture about a quarter of an inch in diameter and the length about ten inches. The wider aperture is about an inch in diameter.

The cone tip is inserted into a person's ear as they lie with the head resting on one side on a pillow. Once the tip is pressed into the ear canal and the cone held vertical, the upper (wider) end is lit. It burns gently and takes about fifteen minutes to consume a few inches of cone. At this point the cone is removed from the ear and the flame doused; the thin end is held over a bowl of water. A narrow stick (like a blunted wood skewer) is pushed down inside the cone from the wide end toward the tip. This action pushes out the "debris" stuck in the tip into the water, where it floats and can be safely examined. Our friend assured us that the worm-like wax (about one inch long or more in length and the same diameter as the tip aperture) was the wax extracted from the ear by a mysterious action. Apparently (according to our mutual friend) aficionados of this cleansing method understand the process as vaguely "suction" or "capillary action."



Our skepticism was compounded of several specific doubts. First, the suction action would not likely be quite strong enough to extract ear wax of that quantity (if derived from convection currents in and around the tip of the cone). The heat of the cone may ease this process, of course, but if the tip is pushed firmly down in the ear canal there is no room for air to circulate down and around the ear canal. Second, capillary action is not known to exist with wax so far as we are aware—hence this mechanism, as accessory or on its own, would seem to be ruled out.

The Experiments

In our first attempt to achieve clearheadedness, we applied the technique to one of our own ears as per the instructions. Indeed, the waxy residue plopped out

Philip Kaushall is a clinical psychologist. Address: Psychology Affiliates, 2830 Fourth Avenue, San Diego, CA 92103. Justin Neville Kaushall is a high school student.

into the bowl of water as described. But the residue had a coloration and consistency closely matching that of the cone/candle. Close inspection of the wax did not reveal a mixture of two substances, ear wax and candle wax. Instead, the debris seemed quite uniform in appearance. Since we would expect at least some candle wax to melt down the inside of the cone (indeed some drippings were visible both inside and outside the cone) perhaps *all* of it was candle wax!

With our curiosity unsatisfied we continued with a second experiment: a lighted cone/candle was held above the kitchen counter top *without* insertion into an ear. At the conclusion of the requisite burning period, the same amount and kind of waxy residue plopped into the bowl of water, when forced out of the tip by the skewer. Again, the consistency of the debris allowed that there was only one kind of residue, not a mixture of ear wax and candle. In this case, no ear wax could have contaminated the residue anyway: a new cone had been used and it had not approached an ear. Hence this waxy residue, was all derived from the ear candle! Conclusion: *the cleansing of ear wax by the ear cone is a myth.*

However, in the hope of putting the final kibosh on any conceivable competing hypotheses, a third experiment was performed. A two-inch length of plastic tubing of an outer diameter such that it could be jammed tight inside of a cone tip was pushed inside a cone until so jammed, to within about half an inch from the tip of the cone. The rationale was that the tube would allow any "convection," "capillary action," or "suction" to operate relatively unimpeded, and would not impede the flow of heat down the cone to the ear canal. However the tube would block, from the tip, the accumulation of wax presumably dripping down the inside surface of the cone-candle from the burning wax at the lighted end.

With a new ear cone thus arranged, it was inserted into the other (unused) ear of the same worthy volunteer subject (actually a co-experimenter) and lighted. After the requisite fifteen minutes of burning the cone was removed from the ear and the tip of the cone was visually examined. *No wax of any sort* could be discerned—the tip of the cone was as clear as it had been before this experiment—except for minute pieces of loose wax apparently broken off (they clearly had not been in molten form) from the edge of the tip, presumably due to the tip's insertion into the ear canal.

Conclusion

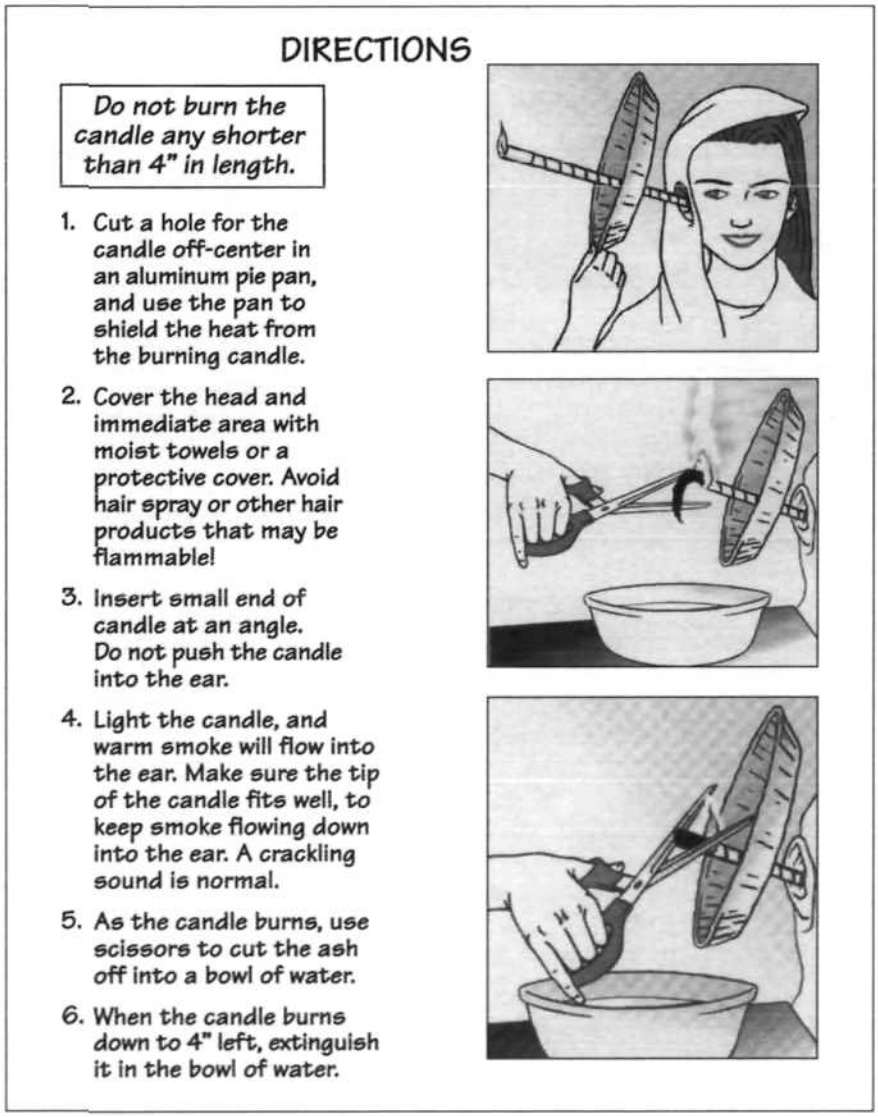
When the tip of the cone was blocked from accepting molten wax from the inside of the burning cone/candle, none was evident at the tip. Hence the wax that is pushed out from an ear cone is not from the ear, as purported, but rather is a product of the candle itself.

In addition, the volunteer subject did not experience any objective or subjective effects at all from the practice of ear coning. Even the sensations of warmth or of unbounded happiness were missing from the procedure; only the sensation of curiosity satisfied—after these experiments were concluded.

As for the advertised benefits of ear coning quoted in the beginning of this article, only the scientifically minded would ask: Where are the experiments and theories that prove these extravagant claims? We would now ask in addition: Where are the Department of Consumer Affairs and the Better Business Bureau?

Note

1. Experimental materials, advertisements, claims and instructions can be supplied on request to the authors. □


DIRECTIONS
Do not burn the candle any shorter than 4" in length.
1. Cut a hole for the candle off-center in an aluminum pie pan, and use the pan to shield the heat from the burning candle.
2. Cover the head and immediate area with moist towels or a protective cover. Avoid hair spray or other hair products that may be flammable!
3. Insert small end of candle at an angle. Do not push the candle into the ear.
4. Light the candle, and warm smoke will flow into the ear. Make sure the tip of the candle fits well, to keep smoke flowing down into the ear. A crackling sound is normal.
5. As the candle burns, use scissors to cut the ash off into a bowl of water.
6. When the candle burns down to 4" left, extinguish it in the bowl of water.

Sample directions included in ear candling literature.

Little Red Riding Hood

Little Red Riding Hood
Went walking through a wood.
She met a wolf and stopped to chat.
Don't ask what happened after that!

—*Armand T. Ringer*

One of the funniest of all games played by Freudian literary critics is that of finding sex symbols in old fairy tales. It is a very easy game to play. Freud is said to have once remarked that a cigar sometimes is just a cigar, but psychoanalysts who write about fairy tales seem incapable of seeing them as just fantasies intended to entertain, instruct, and at times frighten young children.

Bruno Bettelheim's analysis of Little Red Riding Hood (LRRH), in his book *The Uses of Enchantment: The Meaning and Importance of Fairy Tales* (1976) is a prime example of Freudian symbol searching. But first, a brief history of this famous fable.

The story began as a folk tale that European mothers and nurses told to young children. The fable, in its many variants, came to the attention of Charles Perrault (1628–1703), a French attorney turned poet, writer, and anthologist. He published one version in a 1697 collection of fairy tales—a book that became a French juvenile classic.

Perrault opens his story "*Le Petit Chaperon Rouge*" (Little Red Cape) by telling about a pretty village girl who is called Little Red Riding Hood because she loves to wear a red cape and hood given to her by her grandmother. Her mother hands her some biscuits and butter to take to the sick grandmother in a nearby village. Walking through a wood, LRRH encounters a friendly wolf who asks where she is going. After she tells him, the wolf says he'll go there too, but by a different route and they'll see who gets there first.

The wolf arrives ahead of the girl, devours the grandmother, then crawls into bed. When LRRH shows up he simulates the grandmother's voice, telling her to put the biscuits and butter aside and climb in bed. LRRH undresses and does as she is told. A famous dialog follows: "What great arms you have, grandma! The better to embrace you, my child. What great legs you have! The better to run with, my child. What great ears! The better to hear with. What great eyes! The better to see with. What great teeth! The better to eat you with."

The wolf then gobbles up LRRH and the story ends! I have been told, though I strongly doubt it, that French children find this ending amusing, and are not in the least disturbed by it. Andrew Lang, who reprinted Perrault's version in his *Blue Fairy Book*, severely criticizes Perrault for choosing a version with such a gruesome ending.

When the German brothers Jacob and Wilhelm Grimm later published in 1812 their collection of more than 200 traditional fairy tales, many taken from Perrault, they gave the story a less grim ending. In their version (you'll find it in the Modern Library's *Tales of Grimm and Andersen*), LRRH's mother gives her cake and a bottle of wine to take to the ailing grandmother. LRRH is not afraid of the wolf when she meets him in the forest. He persuades her to pick some flowers to take to her grandmother. While she is doing this (disobeying her mother who told her not to dawdle) the wolf hastens to the grandmother's house, finds the door unlocked, enters, and promptly eats the grandmother.

When LRRH arrives she is surprised to find the door open. She thinks it is her grandmother in bed because the wolf has pulled a nightcap over his face, and sheets over his body. LRRH stands beside the bed while the familiar dialog occurs about the wolf's body parts. The wolf then springs out of bed and eats LRRH. He now goes back to bed and falls asleep. A passing hunter hears the wolf's loud snores. He goes inside to investigate and is about to shoot the wolf until he realizes it may have eaten the grandmother. So he pulls out a knife and cuts open the wolf's belly. Both LRRH and the grandmother emerge as unharmed as Jonah when he was vomited out of the whale's belly.

LRRH brings some big stones into the house to put inside the wolf, who is still asleep. When he awakes and tries to get

Martin Gardner's two-volume Annotated Alice *has recently been reprinted in a one-volume edition.*

away, the heavy stones drag him down and he drops dead. The hunter skins the wolf and takes the skin home. The grandmother can hardly breathe, but she feels much better after eating the cake and drinking some wine. LRRH says to herself, "I will never again wander off into the forest as long as I live, when my mother forbids it."

The tale is short and simple. Its obvious moral is that children should obey their mothers when they walk through dangerous areas, and to beware of seemingly friendly strangers. I suppose it is the linking of LRRH's beauty and innocence with her grisly experience that has led to her capturing the hearts of so many adults everywhere, especially in Germany, France, Sweden, and England. "Little Red Riding Hood was my first love," declared Charles Dickens. "I felt that if I could have married Little Red Riding Hood, I should have known perfect bliss."

Little Red Riding Hood and the Wolf, by Gustave Doré. This picture is on the front cover of the 1989 paperback edition of Bruno Bettelheim's *The Uses of Enchantment.*

Bruno Bettelheim devotes eighteen pages of his book on fairy tales to LRRH.[1] In his eyes the girl is not as innocent as she seems. She is at the nymphet stage when her premature "budding sexuality" is creating deep unconscious conflicts between her id (animal nature) and her superego (conscience), as well as between her allegiance to what Freud called the "pleasure principle" and the "reality principle." Unconsciously, she wants to be seduced by her father. The wolf's eating her represents that seduction.

The red color of LRRH's hood, according to Bettelheim, symbolizes her unconscious sexual desires. He sees the gift of the hood by the grandmother as representing a transfer of sexual attractiveness from an old sick woman to a young healthy girl. The grandmother is a symbol of the little girl's mother. When the wolf eats the grandmother it represents the little girl's wish to get rid of her mother so she can have her father all to herself.

In Grimm's version, Bettelheim sees the hunter as another father symbol. When he cuts open the wolf's belly it indicates "the idea of pregnancy and birth," thus coming "too close for comfort in suggesting a father in a sexual activity connected with his daughter."

Bettelheim, of course, is not the only Freudian to read dark sexual meanings into the story. Psychoanalyst Erich Fromm, in *The Forgotten Language: An Introduction to the Understanding of Dreams, Fairy Tales, and Myths* (1951) is also convinced that LRRH is experiencing unconscious sexual impulses and really wants to be seduced by the wolf. The red cape symbolizes her menstrual blood as she enters womanhood. When the mother warns her not to leave the path or she might fall and break the wine bottle, it represents the mother's fear that her daughter might lose her virginity by breaking her maidenhead.

"The male is portrayed as a ruthless and cunning animal," Fromm writes. The sexual act becomes a "cannibalistic act in which the male devours the female." Fromm sees this as an expression of a deep antagonism toward men by frigid females who do not enjoy sex. The male wolf is "made ridiculous" by showing "that he attempted to play the role of a pregnant woman, having living beings in his belly." The stones that LRRH puts in the wolf's stomach are "symbols of sterility" that cause him to collapse and die. The stones "mock his usurpation of the pregnant woman's role."

"The story," Fromm concludes, "speaks of the male-female conflict; it is a story of triumph by man-hating women, ending with their victory, exactly the opposite of the Oedipus myth, which lets the male emerge victorious from this battle."

Jack Zipes, who teaches German at the University of Minnesota, is the author of *The Brothers Grimm* (1986), a two-volume edition of Grimm's stories, a collection of French folk tales, and other books on folklore. One of his books is titled *The Trials and Tribulations of Little Red Riding Hood* (1983, updated in 1993). The book is a marvelous scholarly history of the LRRH fable and its many versions and interpretations.

Zipes covers all the oral variations that preceded Perrault, as well as the many retellings by writers from the Grimm brothers to 1993. Some of the oral tales are even more morbid than Perrault's version. In several versions the Wolf slices up the grandmother and pours her blood into a bottle. LRRH then eats and drinks what she thinks is meat and wine before the wolf eats her. In other versions LRRH escapes by telling the wolf she has to go outside to relieve herself.

Thirty-eight variations of the tale are reprinted in Zipes's anthology, along with a raft of illustrations from books and advertisements. At the back of the book he lists 147 published versions of the story, including retellings by Walter de la Mare and James Thurber, as well as comic parodies, poems, plays, recordings, musicals, and films. His bibliography of critical references runs to 153 items!

Zipes takes both Fromm and Bettelheim to task for not recognizing the story's male bias, namely the view that girls secretly want to be raped, and may even encourage it, and that they need a good strong man to shield them from such desires. "It is because rape and violence," Zipes writes in his preface, "are at the core of the history of Little Red Riding Hood that it is the most widespread and notorious fairy tale in the Western World."

Zipes greatly admires today's feminist

writers who analyze the story from a female perspective. Most of them deny that LRRH had unconscious impulses to be raped. They give her the strength and cleverness to take care of herself. An amusing example, though not by a feminist, is Thurber's burlesque in *Fables for Our Times and Famous Poems* (1939). In this brief account, when LRRH approaches the wolf she sees at once he is not her grandmother, "for even in a nightcap a wolf does not look any more like your grandmother than the Metro-Goldwyn lion looks like Calvin Coolidge. So the little girl took an automatic out of her pocket and shot the wolf dead. Moral: It is not so easy to fool little girls nowadays as it used to be."

Views similar to those of Fromm and Bettelheim are advanced in greater detail by Carl-Heinz Mallet, who runs a school for retarded children in Hamburg. A dedicated Freudian, he has written a study titled *Grimm's Fairy Tales*, and another book, *Fairy Tales and Children*. Mallet sees LRRH as a nymphet who is curious about sex. "Behind a sweet, pure facade," he writes in the second mentioned book, "nature dominates, and a primal life seethes." He finds LRRH's sex appeal brought out more vividly in a version of the tale told by Ludwig Bechstein, another German folklorist.

"Once there was an absolutely darling, charming little slip of a girl," is how Bechstein opens his version. When the wolf sees her he thinks, "Oh, you dearest, appetizing hazelnut, you—I have to crack you." Mallet thinks the red hood is the girl's signal that she wants to be raped. "For all her innocence, Little Red Riding Hood turns men on." Why is she so friendly with the wolf? Because, writes Mallet, she subconsciously wants him to attack her.

What about the grandmother? Mallet believes she is a symbol of the mother's sublimated longing for fresh sexual experiences, symbolized, of course, by the grandmother being eaten by the wolf. Oral sex with a vengeance! Part of the mother "is worried about her daughter. Another part wants this very thing for herself."

The wine and cake, for Mallet, represent "bodily pleasures." The grandmother leaves her door unlocked because she secretly hopes a man will invade the house and rape her. Mallet puts it this way:

> The mother dares not seek out the wolf for herself, much as she might like to, and so dresses her daughter attractively and sends her out into the forest, the home of the wicked wolf. Simultaneously innocent and sexy, the child will exert a powerful attraction; the wolf will not stop at voicing polite compliments, and the mother knows it.

Of course the mother is not consciously aware of her motives. She really wants her daughter to seduce the wolf for her (the mother's) vicarious pleasures! The various parts of the wolf's body that LRRH sees and feels represent, for all Freudian critics, the one male organ that she envies and most desires. They suspect that if the truth were known, LRRH finally exclaimed "What a big thing you have between your thighs!" LRRH's death—you guessed it—is a symbol of her orgasm as she is raped. Why is the tale so universally popular? "Not even the most graphic book or movie," Mallet assures his readers, "could outdo the sensuous scene in the grandmother's bed."

The identification of the wolf with a male human womanizer is the basis of a 1966 hit song by Sam the Sham and the Pharoahs. The music is by Ronald Blackwell, and I assume the lyrics were written by Sam. The song opens with a wolf howl followed by, "Who's that I see walking in these woods? Why, it's Little Red Riding Hood!"

The song's first and final verses are the same:

> Hey there, Little Red Riding Hood!
> You sure are looking good!
> You're everything a big bad wolf
> could want.

The song goes on to say that LRRH has big eyes of the sort that drive wolves mad, and "little big girls" should not go strolling through "spooky old woods" alone.

Sam then offers to protect LRRH by walking with her each time she goes through the forest. He hopes she will trust him. Although he yearns to hold her, he won't try because she might suppose *he's* a big bad wolf. However, even bad wolves can be good, and he has a big heart, the better to love her with. He'll be happy to accompany her on walks through the woods until she realizes he's no threat.

Wolf calls are interspersed between the song's stanzas. The recording ends with a wolf howl and Sam repeating, "I mean baaaad!"

Two poems by James Whitcomb Riley are worth mentioning. His three-stanza tribute, "Red Riding Hood," opens:

> Sweet little myth of the nursery
> story—
> Earliest love of mine infantile breast,
> Be something tangible, bloom in thy
> glory
> Into existence, as thou art addressed!
> Hasten! appear to me, guileless and
> good—
> Thou art so dear to me, Red Riding
> Hood!

Riley's other poem, "Maymie's Story of Red Riding Hood," is a lengthy ballad told in an annoying dialect. After the wolf eats the grandmother, a wood-chopper saves LRRH by killing the wolf with a blow on his head, but the poor grandmother remains unrecovered.

Let's try a non-Freudian interpretation of the fable—one that could be made by a theologian. The story is an allegory about good and evil. LRRH is the child, innocent of sin, who is slain by the irrational evil of the universe. Like Moby-Dick, the wolf represents this inescapable aspect of our lives. Every year millions of beautiful children are either slain by a dreadful disease or by slow starvation. In the end, we are all killed by the big bad wolf. In the German Protestant version, the hunter is God. He slays the monster Satan, and restores LRRH and her grandmother to everlasting life.

But enough of such baloney. My next column will recount the sad life of Bruno Bettelheim, how his views about autistic children did terrible harm both to the children he treated and their parents, and about his eventual suicide.

Note

1. Alan Dundes, an anthropologist at the University of California, Berkeley, in an article in *The Journal of American Folklore*, accused Bettelheim of shamelessly cribbing from *A Psychiatric Study of Fairy Tales* (1963), by Stanford psychiatrist Julius Hauscher. Not only does Bettelheim take up the tales in the same order, but there is what Dundes calls "wholesale borrowing of key ideas." Nowhere in his book or in a long list of references does Bettelheim mention Hauscher. See "Was He Really Borrowheim?" in *Newsweek*, February 18, 1991, p. 75. □

Haunted Inns
Tales of Spectral Guests

If testimonials in countless books and articles are to be believed, spending the night in a quaint old hotel might provide an encounter with an extra, ethereal visitor.

Over nearly thirty years of paranormal investigation, I have had the opportunity to experience many "haunted" sites. These have included burial places, like England's West Kennet Long Barrow (where I failed to see the specter of a "Druid priest" that allegedly attends the ancient tomb); religious sanctuaries, such as Christ Church Cathedral in Fredericton, New Brunswick, Canada (where the apparition of the first bishop's wife did not materialize); theaters, including the Lancaster (New York) Opera House (where a ghostly "Lady in Lavender" was a no-show); houses, like the historic residence of William Lyon Mackenzie in Toronto (where ghostly footfalls on the stairs were actually those of real people on a staircase next door); and other sites, notably inns—the subject of this investigative roundup. (Most of the inns cited—all personally investigated—included an overnight stay, staff interviews, background research, etc. [Nickell 1972–2000].)

Why haunted inns? Obviously, places open to the public have more numerous and more varied visitors, and hence more opportunities for ghostly experiences, than do private dwellings and out-of-the-way sites. And inns—by which I include hotels, motels, guesthouses, bed-and-breakfasts, and other places that provide overnight lodging—offer much more. They not only allow extended time periods for visitors to have unusual experiences but also ensure that the guests will be there during a range of states from alertness through sleep. Almost predictably, sooner or later, someone will awaken to an apparition at his or her bedside.

Appearances of the Dead

The experience is a common type of hallucination, known popularly as a "waking dream," which takes place between being fully asleep and fully awake. Such experiences typically include bizarre imagery (bright lights or apparitions of demons, ghosts, aliens, etc.) and/or auditory hallucinations. "Sleep paralysis" may also occur, whereby there is an inability to move because the body is still in the sleep mode (Nickell 1995).

A good example of an obvious waking dream is reported by "A. C." She

Figure 1. Belhurst Castle, an inn in western New York, is the subject of haunting tales.

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was asleep on board the *Queen Mary*, the former ocean liner that, since 1971, has been permanently docked at Long Beach, California. As the woman relates:

> I awoke from a deep sleep around midnight. I saw a figure walking near my daughter's sleeping bag toward the door. Thinking it was my sister, I called out. There was no answer. It was then that I noticed my sister was lying next to me. I sat up in bed and watched the person in white walk through the door!

Another example reported at the Hotel Queen Mary is credited to "H. V.":

> I was awakened from my sleep and observed the image of a person standing in front of my bed. There were no apparent physical features, but it appeared to be holding a flashlight, with a light shining out of it that was brighter than the form itself. I watched as the image swayed back and forth. When I called my roommate the image backed up. I called again and the vision backed up even further, toward the door. I reached for the light switch and tried to turn it on. The light switch seemed to spark and wouldn't turn on all the way. Finally, my roommate woke up; the light came on, and whatever it was, was gone. We slept with the TV on the rest of the night. It was a great experience, and I had a lot of fun!

(Wlodarski et al. 1995, 33, 35)

To be sure, not all sightings of ghostly figures are of the waking-dream variety, many in fact occurring during normal activity. Some are like the report of "J. M." who was at the *Queen Mary*'s Purser's Desk when, he stated, "I caught a brief glimpse out of the corner of my eye, of someone or something moving," or like that of "P. T." who said, "I saw something move out of the corner of my eye . . . a brief glimpse of someone or something" (Wlodarski 1995, 32, 36). Actually, the illusion that something is moving in the peripheral vision is quite common. The typical cause may be a "floater," a bit of drifting material in the eye's vitreous humour, although a twitching eyelid, or other occurrence is also possible.

Such an illusion or a different stimulus—a noise, a subjective feeling, etc.—might trigger, as in one experiencer aboard the *Queen Mary*, a "mental image." In that case it was of a man "wearing a blue mechanic's uniform"—a "feeling" which left after a few moments (Wlodarski et al. 1995, 32). In certain especially imaginative individuals the mental image might be superimposed upon the visual scene, thus creating a seemingly apparitional event.

Research data demonstrate that ghostly perceptions often derive from daydreams or other altered states of consciousness.

This may be the explanation for a frequently reported type of apparition that is seen momentarily and then vanishes when the percipient looks away for an instant. For example, a New Mexico hotel, La Posada de Santa Fe—which is allegedly haunted by the spirit of Julie Staab (1844–1896), wife of the original builder—offers no fewer than three sightings of this type. One was reported in 1979 by an employee who was cleaning one night. Although the place was deserted he looked up to see a translucent woman standing near a fireplace. Inexplicably, he "returned to his cleaning," an act that one writer noted showed "remarkable composure." Then, "when he looked up again the figure had vanished." On another occasion a security guard showed less reserve when, seeing what he thought was Julie, "He turned and ran, and when he looked back, the figure had vanished." Yet again, a "beautifully dressed" Julie, reposing in an armchair, was seen by the hotel phone operator. However, "When she looked back at the chair a few seconds later, the ghost had vanished" (Mead 1995, 157–158). Such reports suggest that the apparition is only a mental image that occurs in a kind of reverie.

Indeed, personal experience as well as research data demonstrates that ghostly perceptions often derive from daydreams or other altered states of consciousness. Haraldsson (1988) for instance specifically determined that apparitional sightings were linked to periods of reverie. As well, Andrew MacKenzie (1982) demonstrated that a third of the hallucinatory cases he studied occurred either just before or after sleep, or while the percipient was in a relaxed state or concentrating on some activity like reading, or was performing routine work. The association of apparitional experiences with a dream-like state was also reported by G. N. M. Terrell (1973). He observed that apparitions of people invariably appear fully clothed and are frequently accompanied by objects, just as they are in dreams, because the clothing and other objects are required by the apparitional drama. The three La Posada encounters are consistent with all of these research observations. That the apparitions vanish when the observer's gaze is shifted could be explained by the hypothesis that the reverie is merely broken.

Whereas "waking-dream" type encounters are obviously more likely to be experienced by hotel guests rather than employees, the reverie or daydream type is often reported by the latter—as in all three of the La Posada examples, as well as some of the instances from the *Queen Mary* (Wlodarski et al. 1995, 48, 49) and elsewhere. Hotel staff performing routine chores may be particularly susceptible to this type of apparitional experience.

Selling Ghosts

The power of suggestion can help trigger ghostly encounters. According to noted psychologist and fellow ghostbuster Robert A. Baker, "We tend to see and hear those things we believe in" (Baker and Nickell 1992, 129). Even without the prompting that comes from an inn's reputation for being haunted, the mere *ambiance* of places with antique architecture and quaint decor can set the stage for spirits to debut. An example is Belhurst Castle (figure 1), a turreted stone inn in Geneva, New York, whose high-ceilinged lobby is graced with wood paneling, a large fireplace, and a suit of armor to help conjure up

romantic notions. Historic sites like Maine's Kennebunk Inn (expanded from a home built in 1799), the Farnsworth House in Gettysburg, Pennsylvania, (constructed in 1810 and its south side pockmarked with bullet holes from the Battle of Gettysburg), and even the more recent Hotel Boulderado in Boulder, Colorado (which opened on New Year's Day 1909 and boasts among its former guests Bat Masterson), offer the impress of history and legend. So does the Bardstown, Kentucky, Jailer's Inn, a bed-and-breakfast converted from the old Nelson County Jail (built in 1819), and, in Santa Fe, the historic, adobe La Fonda Inn.

The influence of setting and mood on reports of phantoms is sometimes acknowledged even by those who approach the subject with great credulity, although they may interpret the linkage differently. Broadcaster Andrew Green, for example, in his treatise *Haunted Inns and Taverns* (1995), says of some copies of English pubs in Europe, the United States, and elsewhere: "A few have reproduced the ambiance so successfully that ghostly manifestations, such as might be associated with a genuine article, have occurred there." Green opines that the "genial atmosphere" of such taverns attracts authentic English ghosts. He seems not to consider the possibility that the setting merely influences the imaginations of those making the reports.

In contrast is the knowing statement of ghost hunter Mason Winfield (1997, 176)—referring to the allegedly haunted Holiday Inn at Grand Island, New York—that "The environment of the Inn is not the gloomy, historic sort that puts people in mind of spooks." As one who has spent an uneventful night in that resort hotel, indeed in its reputedly most-haunted room 422, I quite agree. But apparitions can occur anywhere. The Holiday Inn's child ghost "Tanya" apparently originated with an impressionable maid who was cleaning the fourth-floor room shortly after the hotel opened in 1973. The housekeeper suddenly glimpsed a little girl standing in the doorway and, startled, dropped a couple of drinking glasses. When she looked up again, the child was gone. As the maid tried to flee, it was reported, "somehow her cart trapped her in the room. She screamed" (Winfield 1997, 176). Her apparitional encounter seems consistent with the typical conditions we have already discussed: at the time, she was performing routine chores. As to the cart, most likely, flustered, she merely encountered it where she had left it, blocking her flight, and panicked.

Figure 2. Does this corridor view in Colorado's Hand Hotel show spectral entities, or just silhouetted students? You decide! (Photos by Joe Nickell)

Other sightings there—like that of a Canadian man who awoke to see a little girl at the foot of his bed (Safiuddin 1994)—were of the waking-dream variety. But why is it often a little girl (even if varyingly identified as age "five or six" or "about age 10" [Winfield 1997, 176; Safiuddin 1994])? Those knowing about "Tanya" before their sighting may thus be influenced, while those who do not may, in light of subsequent statements or leading questions from those to whom they report an incident, reinterpret a vague sense of presence or a shadowy form as the expected ghost child. To compound the problem, many of the reports are at second- or third-hand, or an even greater remove.

Researching tales like that of the Holiday Inn's child specter can be illuminating. In that case there is no evidence to support claims of "a little girl who was burned to death in a house that formerly stood on the site" (Hauck 1996, 291). The Grand Island historian was unable to document any deadly fire at that locale. The only known blaze at the site occurred in 1963, at which time the historic John Nice mansion had been transformed into a restaurant, and there was not a single fatality (Klingel 2000). My search of the nearby Whitehaven Cemetery, where the Nice family is buried, failed to turn up any credible candidate for the role of ghost-girl, least of all one named "Tanya"—which, as census and cemetery records show, was not the name of any of John Nice's ten daughters (Linenfelser 2000).

A similar lack of substantiation characterizes many other haunting tales. Consider, for instance, the previously mentioned Belhurst Castle, located in New York's scenic Finger Lakes region. Its colorful brochure announces: "Tales persist of the romantic past, of secret tunnels, hidden treasures buried in the walls and on the grounds, of ghosts and hauntings. Fact or Fancy? No one knows." Actually the tales originated with the old mansion that previously stood on the site. No tunnel was ever found, and the stories apparently derive from a "small blind cellar" discovered beneath the old house when it was razed in 1888 to build the present "castle." There was merely speculation that it might have served as a hidden vault for the securing of valuables. Prior to this, the dilapidated mansion "was a

favorite playground of Geneva's adventure-seeking youth, who were enticed by its reputation of being haunted," according to a knowledgeable source, who adds: "However, there is no record that any 'spooks' were ever encountered there, or ghostly manifestations of any sort whatsoever" (Emmons 1959). Nevertheless, citing some other Belhurst tales, Robin Mead states, in his *Haunted Hotels* (1995), " . . . a property such as Belhurst Castle ought to be surrounded by legends like this, for they complement the atmosphere of romance and add a touch of mystery."

Several inns I have investigated have featured ghosts in their promotional materials. In addition to Belhurst Castle, they include the Hotel Boulderado, the Hollywood Roosevelt Hotel, and Gettysburg's Historic Farnsworth House Inn. The latter advertises that it is "open for tours and ghost stories": "Descend the staircase into the darkness of the stone cellar. Hear, by candlelight, tales of phantom spectres whom [*sic*] are still believed to haunt the town and its battlefield." These storybook ghosts may be the only ones to inhabit the inn. The owner told me emphatically that he had never seen a ghost—there or anywhere else. "I don't believe in that stuff," he said. His daughter, however, who manages the inn, is not so skeptical, having "felt" a "presence" there. She related to me the experience of one guest who had seen a spectral figure after having gone to bed—very likely a common waking dream (Nickell 1995, 55).

The effect of new ownership has seemingly launched many hotel hauntings. Stories of ghostly events on the *Queen Mary* did not surface until after the ship became a tourist attraction in 1967 (Wlodarski et al. 1995, 13). At many other hotels, alleged paranormal events have seemed to wax and wane with changes in management. At the Holiday Inn on Grand Island, for example, the ghost tales—beginning soon after the initial opening—were happily related by one manager. He told a ghost hunter (Myers 1986, 291), "Our housekeepers have stories about Tanya that could fill a book." But a successor was "concerned with trying to improve the reputation of his hotel and dispel the rumors surrounding it," refusing "to acknowledge any paranormal happenings" (Gibson 1999).

A hoax could well explain the "ghostly activity" at the Kennebunk Inn, which included "moving and flying crystal goblets, exploding wineglasses behind the bar, disarrayed silverware, and moving chairs."

Ghost tales may indeed be good for business. Explained an owner of one restaurant with bar, which "had a reputation for having ghosts" (Myers 1986, 228): "It was good conversation for the kind of business we're in. I never tried to dissuade anyone." Other proprietors may go even further. An alleged ghost at the Kennebunk Inn in Kennebunk, Maine, may have originated with the purchase of the inn by one of its earlier owners. He reportedly told a bartender one night that he was "going to make up a story about a ghost," presumably to promote the inn. Years later the former bartender related the story to the current owner, who in turn told me (Martin 1999).

A hoax could well explain the "ghostly activity" at the Kennebunk Inn, which included "moving and flying crystal goblets, exploding wineglasses behind the bar, disarrayed silverware, and moving chairs" (Hauck 1996, 198). In fact, prior to the particular change of ownership that seemed to spark the poltergeist effects, apparently "all was quiet" at the historic inn (Sit 1991). Apparently the ghost moved away when, after about fifteen years, the business was sold again. Still later owners John and Kristen Martin, reopened the inn in mid-1997 and, along with a tenant who had lived there for twenty years, reported no experiences (Martin 1999).

Hoaxes do occur. For example, I caught one pranking "ghost" *flagrante delecto*. In 1999 I accompanied a teacher and ten high school students from Denver's Colorado Academy on an overnight stay in a "haunted" hotel. Located in the Rocky Mountains, in the old mining town of Fairplay (where an art teacher conducts "ghost tours"), the Hand Hotel was built in 1931 (figure 2). In the early evening as we gathered in the lobby beneath mounted elk heads and bear skins, the lights of the chandelier flickered mysteriously. But the teacher and I both spied the surreptitious action of the desk clerk, whose sheepish smile acknowledged that one brief hotel mystery had been solved.

Other signs of pranking there included a "ghost" photo (displayed in a lobby album) that the clerk confided to me was staged, and some pennies, placed on the back of a men's room toilet, that from time to time would secretly become rearranged to form messages—like the word "why?" that I encountered. This obvious running prank invited other mischief makers (like one student) to join in.

Enter "Psychics"

Ghostly presences are hyped at many inns when "psychics" visit the premises. One session at the Farnsworth House was part of a television production for Halloween, an indication of how much credibility should be afforded it. Brookdale Lodge, near Santa Cruz, California (which I investigated for a Discovery Channel documentary that aired May 24, 1998), once invited Sylvia Browne. A regular on the *Montel Williams* TV show, the self-claimed clairvoyant and medium envisioned a ghost girl that she named "Sara" (Gerbracht 1998), helping to bring the total number of entities thus far "detected" at Brookdale to forty-nine—and counting (Hauck 1996, 38). Such psychics typically offer unsubstantiated, even unverifiable claims, or information that is already known. This may be gleaned in advance from research sources or obtained by the "psychic" from persons who have such knowledge through the technique of "cold reading" (an artful method of fishing for information employed by shrewd fortunetellers).

Alternatively, the psychic may make numerous pronouncements, trusting that others will count the apparent hits and ignore, or interpret appropriately, the misses.

This is not to say that all such pronouncements are insincere. Those who fancy themselves psychics may exhibit the traits associated with a "fantasy-prone" personality. That is a designation for an otherwise normal person with an unusual ability to fantasize. As a child, he or she may have an imaginary playmate and live much of the time in make-believe worlds. As an adult, the person continues to spend much time fantasizing, and may report apparitional, out-of-body, or near-death experiences; claim psychic or healing powers; receive special messages from higher beings; be easily hypnotized; and/or exhibit other traits (Wilson and Barber 1983). Anyone may have some of these traits, but fantasizers have them in profusion. Sylvia Browne, for example, as a child had what her parents called "made-up friends," particularly a "spirit guide"—still with her—that she named "Francine." Browne undergoes "trances" in which "Francine" provides alleged information from "Akashic records, individual spirit guides, and messages from the Godhead." Browne also claims to see apparitions, talk to ghosts, have clairvoyant visions, make psychic medical diagnoses, divine past lives, etc. She has even started her own religion, Novus Spiritus ("New Spirit"); (Browne and May 1998; Browne 1999).

The use of psychics is a stock in trade of many so-called parapsychologists. Among them is Hans Holzer, one of whose many books bills him as "the world's leading expert on haunted houses" (1991) while another avows that his "cases" were "carefully investigated under scientifically stringent conditions" (1993). Unfortunately, these claims are belied by Holzer's credulous acceptance of "spirit" photos, anecdotal reports, and other doubtful evidence. For example, he "investigated" a former stagecoach inn at Thousand Oaks, California, by relying on self-styled "witch" Sybil Leek (1922–1982). In one room Leek "complained of being cold all over" and "felt" that a man had been murdered there. No verification was provided and Holzer admits she "did not connect" with a female ghost whose "presence" had been "sensed" by the inn's owners. Nevertheless Holzer casually opines that "Like inns in general, this one may have more undiscovered ghosts hanging on the spot" (Holzer 1991, 192).

Fantasy Quotient

Professional psychics like Sybil Leek and Sylvia Browne aside, we may wonder whether ordinary "ghost" percipients also have similar tendencies toward fantasizing. Over nearly three decades of ghost investigating I have noticed a pattern. In interviewing residents or staff of an allegedly haunted site, I would usually find a few who had no ghostly experiences—for example a bell captain at La Fonda Inn in Santa Fe who had spent forty-three years there. Others might have moderate experiences—like hearing a strange noise or witnessing some unexplained physical occurrence such as a door mysteriously opening—that they attributed to a ghost. Often, those interviewed would direct me to one or more persons whom they indicated had had intensive haunting encounters, including seeing apparitions. In short, I usually found a spectrum that ranged from outright skepticism to mediumistic experiences. I also sensed a difference in the people: some appeared down-to-earth and level-headed, while others—I thought—seemed more imaginative and impulsive, recounting with dramatic flair their phantomesque adventures. I had no immediate way of objectively measuring what I thought I was observing, but I gave it much thought.

At length I developed a questionnaire that, on the one hand, measures the number and intensity of ghostly experiences, and, on the other, counts the number of exhibited traits associated with fantasy-proneness. Tabulation of a limited number of questionnaires administered thus far shows a strong correlation between these two areas—that, as the level of haunting experiences rises, the fantasy scale tends to show a similarly high score.

As this and other evidence indicates, to date there is no credible scientific evidence that inns—or any other sites—are inhabited by spirits of the dead. As Robert A. Baker often remarks, "There are no haunted places, only haunted people."

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We'll *Feng Shui* Until the Contrails Get Us!

What is the hottest technique being used by cutting-edge companies of the Silicon Valley to get ahead of the high-tech competition? None other than the ancient Chinese art of *feng shui*, the harmonious placement of objects to promote health, balance, prosperity, and well-being. "*Feng shui* was once viewed as a secret weapon used by companies with Asian roots, and, occasionally, by a few tradition-busting mainstream executives to get an edge in business. Stories are plentiful about how companies have oriented new buildings and set up executive offices according to *feng shui* principles," writes the San Jose *Mercury News* (April 3, 2000).

Noting that *feng shui* consultants' fees typically start at $200 an hour (with a two-hour minimum), the article provides helpful instructions for those wishing to become harmonious on a budget. First, you divide your office or cubicle into thirds, both horizontally and vertically. Next, connect the endpoints to form an octagon. Finally, you orient your workplace to the *ba-gua*, the eight-sided template that forms the basis for *feng shui*. "If your office or cubicle is missing certain sides, place mirrors across from the missing sides or hang crystals near them. . . . Stuffed animals, even Beanie Babies, work fine, too, if placed at appropriate heights." Apparently foolishness and dreaming has replaced hard-headed analysis in California's frenzied Internet Gold Rush.

Nor is Silicon Valley the only place where *feng shui* is making inroads. Reuters reported on April 13 that the British Tomato Growers Association has been encouraging its members to experiment with *feng shui* in the hopes that its channeled energy would lead to bigger and juicier crops. However, on the Isle of Wight, two tomato growers quit their jobs because they felt that their employer's use of *feng shui* openly "relies on a power other than God" and hence was in conflict with their Baptist religious beliefs.

Commenting on the above controversy, a spokesman for the Tomato Growers Association optimistically noted that last year's innovation—playing rock and roll music to the plants—may have contributed to a production rise of five percent. "While we don't put it entirely down to the introduction of rock and roll music, where sound waves help with the pollination process, it has encouraged us to think laterally and not be afraid to try new ideas," said the association's chairman, Peter Lansdale. Still left unresolved is the question of how *feng shui*'s "harmonious balance" is to be reconciled with the playing of Metallica.

* * *

Twice thus far this year, civilization has had the good fortune to survive two scary disasters that threatened the end of life as we know it. First it was the Y2K bug, which threatened (or in the view of some of the scaremongers, *promised*) to grind our technological society to a halt. Then the supposedly great planetary alignment of May 5 allegedly threatened disaster on Earth with massive earthquakes and cities buried under massive piles of ice (see "May 5, 2000: Will You Survive the Cosmic Y2K Glitch?" SI May/June 2000, p. 8). I was curious to see how the Web site of Richard Noone, the principal scaremonger, would deal with the difficulty that poses itself "when prophecy fails." The answer: for several weeks, it didn't. Indeed, surfing around the Internet's various end-of-the-world links, I even found Web sites that promise Doomsday occurring in 1998 or earlier, shamelessly still displaying themselves for all to see. However, in June Noone got around to sheepishly admitting that it "looks like most earth change activity has not affected high population areas and we are all greatful [*sic*]. The pacific [*sic*] ring of fire has been active with earth quakes [*sic*] and volcanoes. June 4, 2000 7.9 quake hits Indonesia with many 5+ and 6+ after shocks. Another 6.1 hits Turkey 6/6/00. The earth changes cake is not completely baked. Stay tuned. Many of you ask we keep this page up for a while for research purposes. The book *5/5/2000 Ice: The Ultimate Disaster* is now a classic and is still valid as scientists

Robert Sheaffer's World Wide Web page for UFOs and other skeptical subjects is at www.debunker.com.

have seen the planetary alignment as a trigger point for continuing geological and weather disruptions. It is not over yet and we suggest you continue with your emergency preparations." In the words of Cameron Scott Mackenzie, who has filled various Internet newsgroups with postings of apocalyptic alarums, "No prophecies ever fail, they just take longer to be fulfilled."

But don't get too complacent about our temporary respite from doom, because there's more to come. The so-called "sleeping prophet" Edgar Cayce foresaw a "a shifting of the poles" (or at least the beginning of "a new cycle") to occur in 2000 or 2001 (see www.all-ez.com/earth.htm). So according to Cayce, Noone may yet be proved to be correct. And Moira Timms, the New Age author of *Beyond Prophecies and Predictions*, warns that the Great Pyramid contains a 6,000 pyramid-inch-long "prophetic timeline" that starts in 3,999 B.C. (which would be just year 5 of creation, according to Bishop Ussher), and ends precisely on September 17, 2001. Even should the world somehow survive that debacle, Timms warns that there is a date "written in stone": December 23, 2012, otherwise known as "4 Ahua 3 Kankin," or the Very Last Day. That's when the Mayan calendar goes kaput, and it began way back in 3114 B.C. So at best we've got twelve more years.

And even should we somehow survive the destruction foretold by the Great Pyramid and by Edgar Cayce, there's still the matter of the *contrails*, which threaten us all with doom of a far more insidious nature. It has come to our attention that the contrails from jets appears to contain some kind of unknown, sinister poison, and consequently a hideous disease called contrail sickness is sweeping the land. For example, one sufferer reports, "I have had the worst cold that I have ever had in my life and I can't get rid of it and I notice the daily high altitude contrails over my house . . . not only that but my mother is afflicted with the same symptoms." Another is plagued by "severe soreness and swelling of all joints. Fatigue, restless legs, sleep disturbance, depression, weight gain, not able to function at all for more than two hours at a time, than [*sic*] resting for a while. Chills and fever, night sweats, water retention, scalp rash." (See www.contrailconnection.com for these and many other harrowing accounts.)

Worst of all, the contrail poisonings do not appear to be the accidental effects from some careless polluters. No indeed: there seems to be a vast conspiracy underway to spread the poison among the population, for reasons unknown. "Contrails" are therefore sometimes referred to as "chemtrails," to emphasize their sinister, toxic nature. As one sufferer reports, "I have seen three KC-135's flying, and two of them spraying with a tail-boom. I hope someone can document all the sickness caused by this so [my wife] realizes that something very bad, very evil is occurring over our heads." In the tiny northern Ontario town of Espanola, recently "unidentified aircraft" looking like KC-135s allegedly began appearing weekly, spraying out chemicals at low altitudes, reportedly causing residents to suffer neck pain, breathing problems, headaches, burning eyes and dry, hacking coughs. The U.S. Air Force press office in Washington, D.C. denied having any such planes in the area. Nor are the U.S. and Canada the only areas affected: a Web site in the Netherlands warns of the dangers of contrails in Dutch, while other scary reports are pouring in from the U.K., Italy, and Mexico. (The New Mexicans for Science and Reason have a web page debunking "chemtrail" baloney at www.nmsr.org/chemtrls.htm.) And some seemingly innocent postcards from Paris showing the Eiffel Tower have been analyzed by *The Contrail Connection* and found to contain suspicious-looking contrails, suggesting that the vast poisoning conspiracy extends into France as well!

Many of these sufferers reported that they only recognized the symptoms of contrail sickness after hearing of it on the Art Bell show: "If I were not a fan of Art Bell and Coast to Coast AM then I would be completely ignorant about chemtrails! Thank God for your show and the public awareness campaign you are doing!!!" (Late-night conspiracy-talk maven Bell recently retired—apparently for good, this time—but the show continues with Mike Siegel as host. See News and Comment, this issue.) What can people do to protect themselves from this menace? "We now keep windows closed, sliding patio door closed," reports one California man. Better safe than sorry!

Many sufferers reported that they only recognized the symptoms of contrail sickness after hearing of it on the Art Bell show.

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Not all UFOlogists believe that the saucer creatures come from outer space: some say that they hail from realms of inner space instead. Indeed, UFOlogist John Rhodes suggests that "According to science, the humanoid reptilian being may be the result of an undisturbed evolution of the dinosaurs." He suggests at www.reptoids.com, "What if most 'extraterrestrials' are really evolved reptillian terrestrial beings that live underground?" This, he suggests, would explain a lot of things, like the reported reptilian appearance of some saucer beings, as well as the abundance of serpent-like beings such as Satan and Quetzalcoatl in ancient legends. It might also account for the phenomenon of the sinister Men In Black, who are sometimes described as "reptilian" in appearance: "Individuals who accidentally encounter an intelligent non-human life form or discover a facet of the phenomena that might become the "smoking gun" that could disrupt the humanities perception of reality are sometimes contacted by very sinister and mysterious Men In Black (MIB.) Although some of these strange characters may be human operatives trying to confuse and scare people, others appear somewhat reptilian in their facial features and display magical abilities. Are these 'MIB' actually Reptilian Beings In Black (RBIB's?)" Anyone who has had personal contact with a reptilian being is urged to report it to Mr. Rhodes at once. □

Voodoo Science and the Belief Gene

How do people decide what to believe? And why do some believe while others doubt? Science offers a strategy for sorting out the truth.

ROBERT L. PARK

In the summer of 1993, more than 5,000 experts in Transcendental Meditation (TM) from around the world spent two-week shifts in the nation's capital as part of the National Demonstration Project to Reduce Violent Crime in Washington, D.C. Mostly young, white, professionals, they were there to create a "coherent consciousness field" by meditating in unison. They expected this to reduce stress and promote tranquility, not just among those meditating, but throughout the city. Organizers of the $6 million project predicted that violent crime in the city would be reduced by 20 percent.

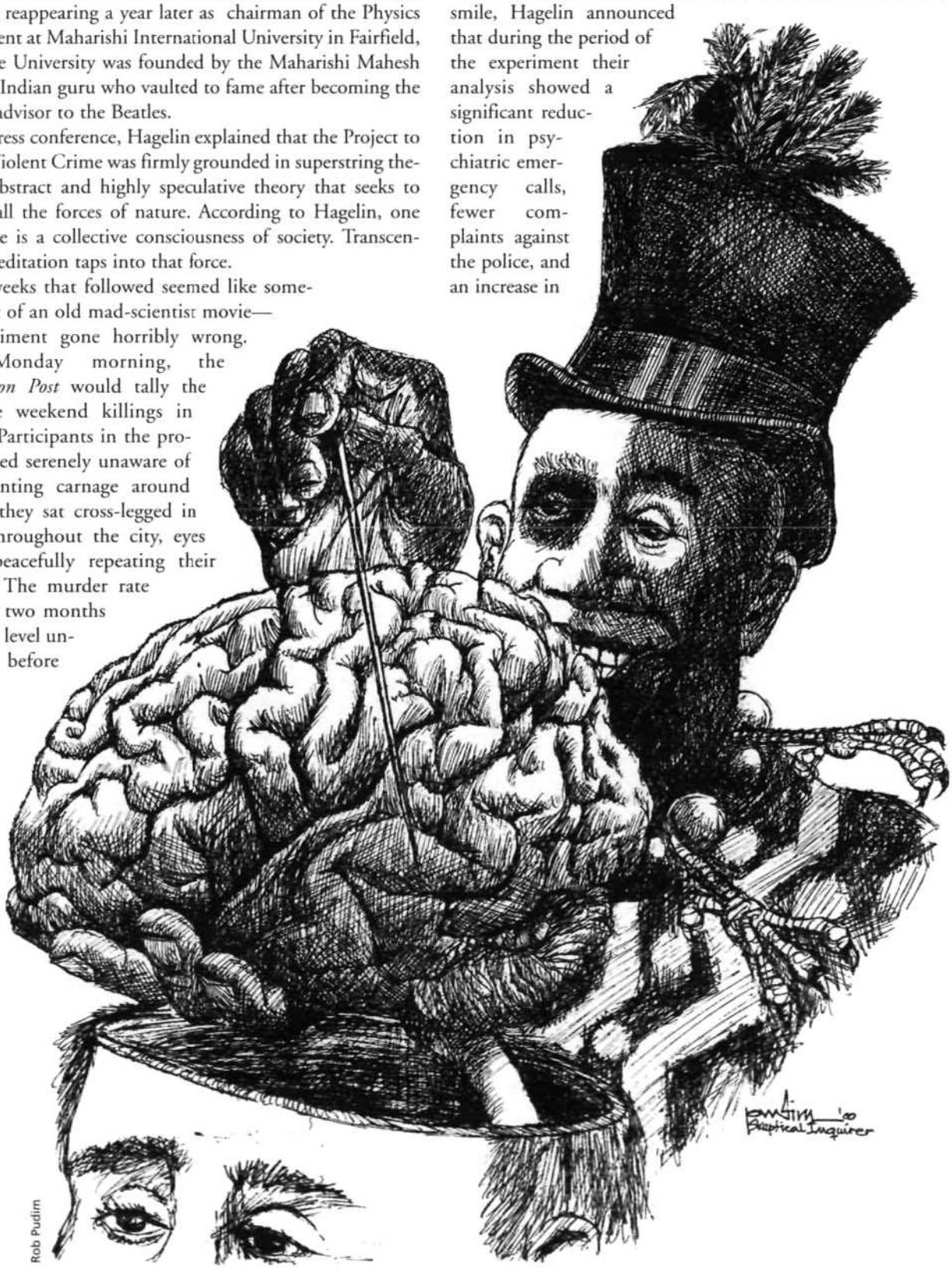
The head of the project was John Hagelin, a 39-year-old physicist with a receding hairline and a perpetual cherubic

smile. His high forehead was unfurrowed by negative thoughts. A *summa cum laude* graduate of Dartmouth, Hagelin had gone on to complete a Ph.D. in physics at Harvard. In 1983, he held a postdoctoral research appointment at the Stanford Linear Accelerator. One day he simply vanished, reappearing a year later as chairman of the Physics Department at Maharishi International University in Fairfield, Iowa. The University was founded by the Maharishi Mahesh Yogi, the Indian guru who vaulted to fame after becoming the spiritual advisor to the Beatles.

At a press conference, Hagelin explained that the Project to Reduce Violent Crime was firmly grounded in superstring theory, an abstract and highly speculative theory that seeks to connect all the forces of nature. According to Hagelin, one such force is a collective consciousness of society. Transcendental Meditation taps into that force.

The weeks that followed seemed like something out of an old mad-scientist movie—an experiment gone horribly wrong. Each Monday morning, the *Washington Post* would tally the gruesome weekend killings in the city. Participants in the project seemed serenely unaware of the mounting carnage around them as they sat cross-legged in groups throughout the city, eyes closed, peacefully repeating their mantras. The murder rate for those two months reached a level unmatched before or since.

At the end of the demonstration period, Hagelin promised that over the coming year the results would be carefully analyzed according to strict scientific principles. As promised, he was back in Washington a year later with a 55-page report. It was a clinic in data manipulation. Smiling his unworldly smile, Hagelin announced that during the period of the experiment their analysis showed a significant reduction in psychiatric emergency calls, fewer complaints against the police, and an increase in



Rob Pudim

public approval of President Clinton—all consistent with the hypothesis that a coherence-creating group of TM experts can relieve social stress and reverse negative social trends.

More significantly, he said, violent crime in the city had been reduced by a remarkable 18 percent. "An 18 percent reduction compared to what?" asked a puzzled reporter for the *Washington Post*, no doubt recalling the previous summer's dreadful murder rampage. Compared to what it would have been if the meditators had not been meditating, Hagelin explained patiently. "But how could you know what the rate would have been?" the reporter persisted. That had been arrived at, Hagelin responded with just a trace of irritation, by means of a "scientifically rigorous time-series analysis" that included not only crime data, but such factors as weather and fluctuations in Earth's magnetic field.

The belief of the Maharishi's followers in the power of TM had not been influenced in the slightest by the outcome of the "experiment." This was *pseudoscience*—all the talk of "string theory" and "consciousness fields" and "time series analysis" was technobabble, meant to give the appearance of science.

Which is not to say that those involved were not sincere in their belief. They may believe so fervently that they are convinced that, properly interpreted, the data *must* support their belief. But how do people decide what to believe? And why do some believe while others doubt?

The Great Global Warming Debate

A good place to examine this question is the controversy over global warming. Andre Gide, the great French moralist, wrote in his journal a half-century ago that, "Man's responsibility increases, as that of the gods decreases." Where once people accepted storms and drought as divine will, there is now overwhelming scientific evidence that human activity can affect Earth's climate.

The evidence comes from a revolution in climate research over the past decade, brought about by new observational techniques including satellites, and a prodigious increase in computational and data-storage capabilities made possible by microelectronics. It now seems undeniable that surface temperatures are warmer than they were 150 years ago. There is also little doubt that the burning of fossil fuels since the beginning of the industrial revolution has led to a significant increase in atmospheric carbon dioxide. What is in dispute are the long-term consequences of continued carbon dioxide increases on Earth's climate and the quality of life. To what extent are the interpretations given to the scientific evidence shaped by the world view of the scientist?

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Before the industrial revolution, the concentration of atmospheric carbon dioxide represented a natural balance, but in a little more than a century, humans have disrupted that balance by burning fossil fuels that were built up in underground deposits over a period of hundreds of millions of years. If this release of carbon dioxide into the atmosphere continues, climatologists warn, there could be disastrous consequences in this century: many of the world's great cities will be submerged by rising sea levels as the polar ice caps melt, and drastic changes in rainfall patterns could wreak havoc on food production. The nations of the world, many scientists argue, should take immediate steps to control the burning of fossil fuels, at least until we can better predict the consequences. We have no right, they declare, to place future generations in jeopardy.

Not all scientists agree. A number of prominent scientists point out that there were periods of global warming long before man began burning fossil fuels, and CO_2 is a relatively minor greenhouse constituent in the atmosphere. They contend that any rise in global temperature since 1850 may simply be the result of natural solar variations. Some go further, describing the increase in carbon dioxide as "a wonderful and unexpected gift of the industrial revolution." The increase in atmospheric CO_2 stimulates plant growth, making this a lusher, more productive world, capable of sustaining a much larger population. The more industrial growth we have, including increased burning of fossil fuels, they argue, the better off we will be. They stop just short of telling people they have a moral obligation to burn more hydrocarbons.

If scientists all claim to believe in the scientific method, and if they all have access to the same data, how can there be such deep disagreements among them? What separates the two sides in the climate controversy, however, is not so much an argument over the scientific facts, scientific laws, or even the scientific method. If the climate debate was just about the laws of physics, there would be little disagreement. But the climate is the most complicated system scientists have ever dared to tackle. There are huge gaps in the data for the distant past, which, combined with uncertainties in the computer models, means that even small changes in the assumptions result in very different projections far down the road. Neither side disagrees with that. Both sides also agree that CO_2 levels in the atmosphere are increasing. What separates them are profoundly different political and reli-

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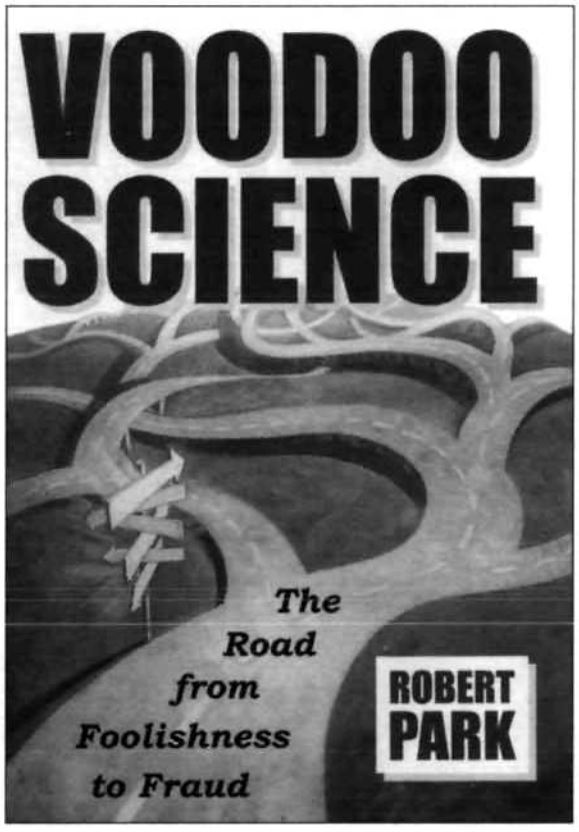
gious world views. They want different things for the world.

The great global warming debate is thus as much an argument about values as it is about science. It sounds like science, with numbers and equations and projections tossed back and forth, and the antagonists believe sincerely that they are engaged in a purely scientific debate. Most scientists, however, were exposed to political and religious world views long before they were exposed in a serious way to science. They may later adopt a firm scientific world view, but earlier world views "learned at their mother's knee" tend to occupy the gaps in scientific understanding.

This sort of dispute is seized upon by postmodern critics of science as proof that science is merely a reflection of cultural bias, not a means of reaching objective truth. They portray scientific consensus as scientists voting on the truth. That scientists are influenced by their beliefs is undeniable, but to the frustration of the postmodernists, science is enormously successful. To understand how science can rise above the beliefs of its practitioners, we must first understand something of the process by which beliefs are generated.



Pleistocene Park

To borrow from the premise of the movie *Jurassic Park*, suppose a mosquito gorged on one of our Cro-Magnon ancestors 30,000 years ago and then became trapped in amber, providing science with ancient human DNA. Would a Cro-Magnon clone, raised in today's society, be some dangerous brute that might escape and terrorize society? The movie *Pleistocene Park* would not be that exciting. Far too little time has passed for any genetic adaptation to the modern world. All of recorded history covers a mere 4,000 years—the industrial revolution just 200—the space age barely four decades. So here we are, trying to cope with a world of jet travel and computers with a brain that responds to external stimuli in ways that conferred some sort of survival advantage on our distant human and prehuman ancestors. What offered a survival advantage in a Pleistocene wilderness does not necessarily do so today.

Psychologist James Alcock describes our brains as "belief engines," constantly processing information coming in from our senses and generating new beliefs about the world around us. [See James E. Alcock, "The Belief Engine," SKEPTICAL INQUIRER, May/June 1995.] A belief begins when the brain makes an association between two events of the form: B follows A. The next time A occurs, the brain is primed to expect B to again follow. The survival advantage of such a strategy for our primitive ancestors is obvious. They had scant means for separating causal connections from mere coincidence—better to take heed of every connection and be safe. We avoid some food, for example, because we once got sick after eating it. Our illness may have had nothing to do with the food, but unless we're facing starvation, there's not much to be lost by avoiding it.

Information gathered by the senses is normally routed through the thalamus, a small subsection deep within the brain, to the sensory cortex, which analyzes it in detail to decide how much weight it should be given. An exception is olfactory input, which apparently follows more ancient pathways to reach the cortex. Sensory information finally reaches the amygdala, almond-shaped structures in the temporal lobes. The amygdala contribute the emotional portion of our response to stimuli. Parts of the amygdala, for example, are involved in fear. Animals with damage to these parts are no longer perturbed by stimuli that previously would have terrified them.

Whether a belief is retained depends on how significant B is—how frightened we are for example—and whether the association with A gets reinforced. Without reinforcement, the expectation that B will follow A will usually fade in time. If B again follows A, however, it may still be a coincidence, but it will now be far harder to convince us of that.

The belief may also be permanent if the information entering the thalamus coincides with a high state of emotional arousal, such as fear, or the thrill of victory. The chemical messengers of emotion cause the thalamus to bypass the sensory cortex and route the information directly to the amygdala. This is often the origin of what might be called "personal superstitions"—the golfer who won't play without his lucky hat for example. People develop elaborate rituals in an effort to recreate the conditions that surrounded some rewarding experience, or to avoid conditions their brains associate with fear or pain. We often find ourselves almost compelled to go through these rituals, even when the cerebral cortex is telling us that a causal connection is highly implausible.

This kind of belief generation was going on long before our ancestors began to resemble humans, of course, but the advent of language opened a powerful new channel, both for the formation of beliefs and for their reinforcement. Speech exposes us to the generation of shared beliefs — beliefs based not on personal experience but on experiences related to us by others.

This has the potential to spare us a lot of unpleasantness. Everyone, for example, need not discover the hard way that a particular plant is poisonous. The shared beliefs of a family or tribe are also a powerful force of social cohesion, and are reinforced throughout our lives.

Language makes vicarious experience the dominant source of belief in humans, overwhelming personal experience. The power of language was enormously amplified by the invention of writing, and continues to be amplified by every new advance in communication from the printing press to the World Wide Web. Beliefs now spread around the world in the twinkling of a computer chip. That which allows us to learn from others, unfortunately, also exposes us to manipulation by them.

The wonder is not that we can be easily fooled, but that we function as well as we do on an alien planet that does not at all resemble the wild planet on which our genes were selected.

Small children are particularly open to new beliefs, accepting whatever they are told by adults without question. Their belief engine runs freely, finding few previous beliefs to contradict what they are told. For a small child who must quickly learn that stoves burn and strange dogs bite, this sort of credulity is important to survival. Because a child's beliefs are not enmeshed in a network of related beliefs, however, children seem able to cast them off almost as easily as they are adopted. Fantastic stories about Santa Claus and tooth fairies, which are accepted uncritically, are dropped just as uncritically when someone, often a playmate, explains that it isn't really so. Nor do children appear to develop doubts about other things they've been taught, just because the Santa Claus story was taken back.

As the store of beliefs grows, conflicts with existing beliefs become more likely, and the child becomes more selective in accepting new beliefs. By adolescence, beliefs tend to be enmeshed in an insulating matrix of related beliefs. Once people become convinced that a rain dance produces rain, for example, they do not lose their belief in years the drought persists. They are more likely to conclude that they have fallen out of favor with the Rain God.

The result is that most of us wind up with beliefs that closely resemble those of our parents and community. Society, in fact, often holds it to be a virtue to adhere to certain beliefs in spite of evidence to the contrary. Belief in that which reason denies is associated with steadfastness and courage, while skepticism is often identified with cynicism and weak character. The more persuasive the evidence against a belief, the more virtuous it is deemed to persist in it. We honor faith.

Faith can be a positive force, enabling people to persevere in the face of daunting odds, but the line between perseverance and fanaticism is perilously thin. Carried to extremes, faith becomes destructive—to the residents of Jonestown, for example, or the Heaven's Gate cult. In both cases, the faith of the believers was tested, and in both cases they passed the test.

The wonder then is not that we can be easily fooled, but that we function as well as we do on an alien planet that does not at all resemble the wild planet on which our genes were selected. If this sounds hopelessly gloomy, be patient, we are coming to the good news: We are not condemned to suffer the tyranny of the belief engine. The primitive machinery of the belief engine is still in place, but evolution didn't stop there. It provided us with an antidote.

What Is Science?

How can it be, we ask, that brains designed for finding food and avoiding predators in a Pleistocene forest enable us to write sonnets and do *integral calculus? We invent poetry and* higher mathematics because our brains hunger for patterns. The wonderful pattern-recognition equipment residing in the higher centers of the human brain allowed our ancestors to adapt to changing conditions with remarkable ease, by quickly picking up the patterns that are characteristic of the new environment.

Animals with much smaller brains than ours also rely on pattern recognition. The desert *Cataglyphis* ant, for example, whose brain contains perhaps 100,000 brain cells, compared to a million times that many for a human, forages over enormous expanses of seemingly featureless terrain, wandering to and fro in search of food. When they finally encounter some wind-blown seed, they return with it at once to their nest in an almost straight line. They navigate by the position of the Sun—even if obscured by clouds—using patterns of polarized light. But the ability of *Cataglyphis* to recognize patterns, as marvelous as it is, is very specialized. Transplanted to a different environment, such as the forest floor where landmarks abound, but where the sky cannot be seen, *Cataglyphis* would be lost.

In humans, the ability to discern patterns is astonishingly general. Indeed, we are driven to seek patterns in everything our senses respond to. So far, we are better at it than the most powerful computer, and we derive enormous pleasure from it. Pattern recognition is the basis of all esthetic enjoyment, whether it is music, or poetry, or chess, or physics. As we become more sophisticated, we seek out ever more subtle patterns. So intent are we on finding patterns that we often insist on seeing them even when they aren't there, like constructing familiar shapes from Rorschach blots. The same brain that recognizes that tides are linked to phases of the Moon may associate the positions of the stars with impending famine, or victory in battle.

That is again the belief engine at work. But once we recognize how easily we can be fooled by the workings of the belief engine, we can use the higher centers of the brain to consciously construct a more refined strategy that combines our

aptitude for recognizing patterns with the accumulation of observations about nature made possible by language.

Such a strategy is called "science." Richard Feynman described science as what we have learned about how not to fool ourselves. Its success and credibility are anchored in the willingness of scientists to expose their ideas and results to the scrutiny of other scientists.

In practice, the process can be noisy and unpleasant. Heated arguments break out at scientific conferences. Reviewers are sometimes accused of obstructing the publication of results that contradict their own work, and editors are accused of bias. Rivalries develop that are as intense as anything that takes place on the playing field. Foolish work sometimes finds its way into print, while a spectacular insight becomes mired in some petty dispute. And yet, overall, the system works amazingly well; good work eventually rises to the top, while the clutter of shoddy science remains manageable. The process transcends the human failings of individual scientists.

Scientists must also be prepared to abandon their most cherished notions. When better evidence becomes available, science textbooks are rewritten with hardly a backward glance. Many people are uneasy standing on such loose soil; they seek a certainty that science cannot offer. For these people the unchanging dictates of ancient religious beliefs, or the absolute assurances of zealots, have a more powerful appeal. Paradoxically, however, yearning for certainty is often mixed with respect for science. People long to be told that modern science validates the teachings of some ancient scripture or New Age guru. The purveyors of pseudoscience have been quick to exploit this ambivalence. Scientists generally believe the cure for pseudoscience is to raise science literacy. We must ask, however, what it is we would want a scientifically literate society to know. There are a few basic concepts—Darwinian evolution, conservation of energy, the periodic table—that all educated people should know something about, but the explosive growth of scientific knowledge in the last half of the twentieth century has left the scientists themselves struggling to keep up with developments in their own narrow specialties. It is not so much knowledge of science that the public needs, as a scientific world view—an understanding that we live in an orderly universe, governed by physical laws that cannot be circumvented by any amount of piety or cleverness.

Although the old belief-generating machinery of the brain is still in place, habits of critical thinking can be adopted that subject each fledgling belief to skeptical analysis before continued reinforcement renders the belief hopelessly resistant. For example, does B really follow A any more frequently than we would expect from chance? Any such analysis must be consciously imposed by the higher centers of the brain. The belief engine knows nothing of the laws of probability.

Back to the Carbon Dioxide War

Which brings us back to the global climate change debate. The Malthusian pessimists argue for the "precautionary principle." Changing human behavior takes time, they contend, and if we don't start now it may be too late to prevent a catastrophe. On the other side, the technological optimists insist that to make policy before we understand the problem, if indeed a problem exists, is to invite failure. To have followed such a policy in the past, they argue, would have denied the world the unquestioned benefits of industrialization. They remind us that science has always found solutions to the problems generated by population growth and industrialization.

It is not so much knowledge of science that the public needs, as a scientific world view—an understanding that we live in an orderly universe, governed by physical laws that cannot be circumvented by any amount of piety or cleverness.

The numbers, when science finally learns them, will determine the winner. Meanwhile, each side knows that every flaw in their data or oversight in their analysis will be seized upon by their opponents. Both sides strive to produce better data and better analysis in the conviction that the truth will favor their prejudice. The ideological passion of Malthusian pessimists at one extreme and technological optimists at the other provides a powerful motivation for better climate science—as long as both sides adhere to the open scientific process.

Transcendental Superstrings

Pseudoscience is never open to scientific challenge. In the spring of 1999, John Hagelin was back in Washington. He held a press conference to announce a plan to end the violence in Kosovo. Citing the "demonstrated success" of the 1993 Project to Reduce Violent Crime in Washington, Hagelin proposed sending an elite corps of 7,000 Yogic flyers into Kosovo to meditate in unison.

Yogic flyers, of course, are the most highly trained followers of the Maharishi, reportedly having developed the ability to levitate. Should anyone doubt it, mattresses were spread on the floor of the National Press Club and a dozen young men seated themselves in the usual meditation position. After several minutes of silent meditation, one of them abruptly levitated—then another. Soon they were all levitating. Well, not exactly floating. It looked more like corn popping, as they repeatedly flexed their muscles and became briefly airborne. It was clearly hard work. I had the definite impression they were following parabolic trajectories.

Hagelin seemed perplexed that Secretary of State Albright had declined his offer. I must admit that I felt the plan had a good chance of working. The sight of 7,000 Yogic flyers popping up and down would surely have rendered the Serbian troops helpless from laughter. □

Ursula Roma

Rogerian Nursing Theory

A Humbug in the Halls of Higher Learning

Schools of nursing at major academic institutions would seem to be unlikely places to find beliefs in the paranormal, crackpot scientific theories being taught, and personality cults flourishing. The emergence of pseudoscientific nursing theories, however, is cause for alarm.

JEF RASKIN

"Read this!" my wife said when she came home from the start of a new term at nursing school. The book she handed me was Martha Rogers's *The Science of Unitary Human Beings.* The more I read, the more I thought I was the butt of an elaborate joke she had somehow put together. It was no joke, she told me. "This is one of the texts for our Nursing Theory course."

My wife's Nursing Theory course had a number of the hallmarks of an indoctrination into a cult: Any serious intellectual challenge to the basic ideas was treated as trouble-making, and the leader was held in reverent awe, regarded as having knowledge beyond the current reach of science. As I did more research into the topic, I discovered that this

brand of nursing theory was widespread. For example, as an alumnus of Penn State, I was not pleased to read that Sarah H. Gueldner, Director of the School of Nursing at the Pennsylvania State University, believes that "Paranormal events such as precognition and clairvoyance may hold potential as evolving communication techniques of space travel and living" (Christensen, Sowell, and Gueldner 1994).

The idea of a comprehensive theory of nursing is a strange one. We could not, for example, formulate a general theory of biology, though we can state biology's essential thrust. Biology is the study of life; it is not a *theory* of life.

Courses in nursing theory are taught at the University of San Francisco, Penn State, Rutgers, Wayne State University, New York University, Case Western Reserve University, the University of Rochester, and many other institutions. Rogerian nursing theory is also taught overseas, for example in England and Australia.

Martha Rogers and Her Theory

Martha Rogers (1914–1994) was dean of nursing at New York University, and published many books and articles on nursing theory. A quote from Afaf Meleis's book, *Theoretical Nursing: Development and Progress* (1997), summarizes a number of Rogers's teachings: "To Rogers, a unitary human being is an irreducible, indivisible energy field and a unitary one. . . . In fact, human beings and environments *do not have* energy fields; they *are* energy fields. They are open for exchange and extend to infinity. Energy fields are identifiable through dynamic-nonstatic wave patterns and organization that changes from 'lower frequency, longer wave pattern to high frequency shorter wave pattern' based on the principle of resonancy. Energy fields are pandimensional, transcend time and space, and therefore may have imaginary boundaries that are unique and changeable."

To better understand what Rogers was talking about, I studied the literature and corresponded with nursing theorists, including a number of nursing doctorates and a present and past president of the Society of Rogerian Scholars. To get started in relating Rogerian Theory to concepts with which I am familiar, I asked each of the nursing theorists these two questions (among others): Just what are the frequencies of the energy fields? Rogers says that these frequencies increase. How did she determine this? Not one of my sources was able to answer either question. By way of a control experiment, I sent e-mail to a few people who teach physics or use physics as part of their profession. I asked, "How did Millikan determine that charge is quantized?" Each replied by describing Millikan's oil drop experiment.

The practice of therapeutic touch is one of the techniques that, as Meleis put it, "demonstrated the [Rogerian] theory's principles" (see Krieger 1987). Therapeutic touch consists of moving the therapist's hands over a patient, without physical touching. (See "Therapeutic Touch," by Vern Bullough and Bonnie Bullough, SKEPTICAL INQUIRER, Winter 1993, Vol. 17 No. 2.) "Assessing" is done by "holding the hands 2 to 6 inches away from the individual's energy field while moving the hands from the head to the feet in a rhythmical, symmetrical manner." Later, "treatment is accomplished by moving the hands to the areas that seem to need attention" and the hand motions are effective in "facilitating the symmetrical flow of energy through the field" according to the Web page of Nurse Healers-Professional Associates International, Inc. which says that it is "the recognized professional organization for the education, practice, and research of Therapeutic Touch." How you can hold your hands two to six inches from energy fields that "extend to infinity" is not explained.

In a classic and widely reported experiment that began as a grade-school science fair project, practitioners of therapeutic touch who had stated that they could sense human energy fields (and thus the presence of a human) with their hands discovered that they could not (Rosa et al. 1998). In comparing the therapeutic touch literature from before that article appeared with that published more recently, claims of the ability to detect the hypothesized energy field as well as trauma and disease through therapeutic touch have been eliminated or are couched in terms that make the ability untestable. Phrases such as "some practitioners may feel . . ." have replaced claims such as "practitioners can detect. . . ."

Why There Can Be No Theory of Nursing

The idea of a comprehensive theory of nursing is a strange one. We could not, for example, formulate a general theory of biology, though we can state biology's essential thrust. Biology is the study of life; it is not a *theory* of life. Its methods range from field observation and laboratory investigations to building mathematical models. Biology includes many theories, such as the theory of natural selection and the theory of the structure and function of DNA. There is no overarching theory of biology from which we derive biological principles. Biology, in turn, is based on chemistry and, ultimately, on physics. Similarly, there is no theory of physics, but a collection of theories about the physical world. Even if the grand unified theory now being contemplated were to be completed, the various branches of physics would not disappear. There

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will still be surprises from the physical world, and much work would still remain to be done, even in centuries-old and well-established fields such as fluid dynamics.

The range of tasks and disciplines that nursing includes is extremely broad. An effective nurse must understand both the human and the physiological aspects of illness. A nurse administers medication and performs procedures such as vaccinations, installing intravenous catheters, and attending wounds; a nurse checks on the propriety of medicines and dosages, sees to the physical needs of patients who cannot tend for themselves, observes and records their physical and emotional status, and can serve as the effector and senses of a doctor. In practice, though not officially, nurses often suggest diagnoses and therapies to doctors. Nurses also become mediators or ombudspersons for the patient with regard to other health care professionals, organizations, governmental bureaucracies, and commercial entities such as insurance companies. This list covers but a fraction of the extraordinarily varied tasks that nurses carry out. In short, a nurse must have a disparate and broad range of interpersonal, organizational, clerical, and technical skills. The knowledge and skill base is compounded from multiple disciplines, including physiology, sociology, psychology, and bookkeeping.

Nursing educators should realize that it makes no sense to claim that there is a single theory of nursing, although the overarching *goal* of nurses' professional practice—to improve the wellbeing of their patients—underlies all the other activities. Trying to impose a "scientific" theory on such a disparate range of skills and techniques detracts from the credibility of the profession.

Ursula Roma

Nursing Theory and the Philosophy of Science

The nursing theory research literature reveals the practitioners as trying to achieve the cachet of science while at the same time distancing themselves from its methods. For example, a section of Meleis's chapter on Rogerian theory called "Theory Testing" begins: "Gill and Atwood (1981) attempted to use Rogers' theory as the basis for a study of wound healing in animals, but were legitimately criticized by Kim (1983) for reductionism, causality, and inappropriate use of the animal model." Reduction, of course, is one of the essential contributions science makes to our understanding of the world. When Newton showed that the orbiting of the planets, the trajectory of projectiles, and the falling of objects toward the ground were all described by the same equations, and due to the same cause, he achieved a remarkable reduction, and thereby an advance in our understanding of nature.

Nursing theorists often use the word *reduction* to name the unfortunate tendency of some clinicians to regard patients as a set of symptoms and subsystems rather than as a person with cultural, social, and psychological attributes. This confusion of two meanings of the same word leads some nursing theorists to disregard the beneficial aspects of reduction (in both senses). For example, it is by isolating specific causes of diseases that medicine has been able to eliminate so many of them as threats. Nursing theory should embrace reduction where it is appropriate, while at the same time resisting any tendency toward treating individual patients as less than full human beings.

To critique an experimental study for treating events as causal again takes nursing theory out of the realm of science, which is primarily concerned with questions of cause and effect. Even where events seem to be acausal (as in the case of the radioactive decay of atomic nuclei), the phenomena are still detectable, demonstrable, measurable, repeatable, and well described by statistical laws. Nursing theorists, by contrast, are averse to causal reasoning and criteria such as repeatability because the phenomena in which they believe, including the paranormal, do not meet with these common-sense standards. Nursing theorists also tend to avoid crucial experiments that could jeopardize the theory in the rare cases where it is coherent enough to permit testing; or, as noted for therapeutic touch, they reinterpret the theory to make it impossible to test. The experiments that do appear in the literature usually depend on subjective judgments, rely on anecdotal reports, or are purely speculative.

For the most part, nursing theory has insulated itself from logical or experimental evaluation by avoiding precision and prediction—or even meaningfulness. For example, Rogers said (1980, quoted in Meleis 1997), "Reality does not exist but appears to exist as expressed by human beings."

The Vested Interest

Nursing theory has an academic structure that is medieval in style. Academic titles take on great significance, and most nursing theorists display at least three sets of initials after their names. For example, an article that tells us that "From the purview of Rogerian thought, VR

Rogers In Her Own Words

Analysis of quotes from Rogers, Martha E., *An Introduction to the Theoretical Basis of Nursing*. Philadelphia, 1970. F.A. Davis Company.

Until you read her works, it is hard to believe how confused and vague Rogers's theoretical writings are. Where she does get precise enough to judge the validity of her thought, she is often simply wrong. For example, Rogers's concept of negative entropy, which she calls "negentropy," is based on her misunderstanding of thermodynamics. After claiming, without examples or citations, that, "With the rise of modern science, evidence that man did not develop according to accepted physical laws became more explicit" she found that, "The second law of thermodynamics, useful in predicting the physical world, was inconsistent with the ways in which living systems behaved" because "An increase in entropy posited a trend toward degradation to homogeneity of organization in contrast to a trend towards heterogeneity and complexity." She concludes that there is a "failure of physical laws to explain the evolution of life." (All the above quotes from p. 51.) She quotes, and summarily dismisses, the correct explanation: "Rapoport endeavors to deal with this problem by stating that 'no living system is a closed system and so the second law does not apply to it'" (52). There is no contradiction between the laws of thermodynamics and the behavior of living systems.

Rogers confounds Darwinian evolution, which she misunderstands, and the common use of the word "evolution" to mean change over time. She still accepts the long-abandoned evolutionary hierarchy with man at the top, "life encompasses the simplest organism to the most complex in an evolutionary hierarchy. . . . At the top of this scale man stands triumphant" (67). All that evolution predicts is improved adaptation, which may lead to greater or lesser complexity.

Rogers is as fuzzy with physics as she is with biology. She says (getting both the scientist's name and the name of the principle wrong), "Heinsenberg's principle of indeterminacy postulates an uncertainty in all knowing" (57). This is not true: Heisenberg's uncertainty principle casts no light at all on logical or mathematical certainty, and does not say that we cannot predict with certainty outcomes of macroscopic events. If a swiftly moving bowling ball directly strikes a bowling pin, we can predict with certainty that the pin will move, even if Heisenberg himself had launched the ball. Also, the principle was not "postulated" but derived from observation and earlier work. Rogers also tells us that "human beings are radiation bodies" (113), but not what a radiation body is. "Radiation body" is not a term from physics or physiology, it is a phrase she has invented, and which (as is all too usual in her work) she presents without definition, leaving you to guess its meaning.

Rogers's theory is based on a number of what she calls "assumptions," and she is often "postulating" concepts. Assumptions and postulates are more the tools of mathematics than of science, because in science the fundamental principles are not assumed or postulated but are based on observation. Here is a typical example: "The principles of homeodynamics . . . are four in number, namely: principle of reciprocy, principle of synchrony, principle of helicy, and principle of resonancy. These principles postulate the way the life process is and predict the nature of its evolving" (79).

Another characteristic of her writing is stating the obvious as though it were a deep insight, for example, "Man's capacity to adapt to a wide range of environmental stresses has received considerable attention and has been proposed to be a significant factor in his survival" (49). Rogers's "second assumption on which nursing science builds may be stated thus: Man and environment are continuously exchanging matter and energy with one another" (54). This is no assumption, but a simple fact. She is not above window-dressing with high-sounding jargon. Her third "assumption" is: "The life process evolves irreversibly and unidirectionally along the space-time continuum" (59). In plain English: "The processes of life cannot be time-reversed." When she says that "Ontogenesis and phylogenesis evidence a lengthening of conscious awareness (the waking state) through time" (93), she is claiming both that during the development of an individual and during humanity's evolutionary history, people stay awake for longer periods of time. However, some people need increasing amounts of sleep as they age, and there is no evidence at all about the sleep habits of our prehistoric ancestors.

A large part of Rogerian theory is based on the idea of an energy field. She says, without any substantiation, "An energy field is the basic unit of living things. It is this field which imposes pattern and organization on the parts" (61). She says that the "the electrical nature of this field is well documented" (104) but gives no citations to the claimed documentation. Rogers never takes her own advice to provide the "clear unequivocal concepts" needed for "a body of scientific knowledge" (81), and we are left with no guidance as to how to detect or measure this field. She does get very specific at one point and tells us that "A series of studies . . . were designed to investigate the relationship between electrical potential differences, as measured by the Keithley Microvoltmeter, Model 153" (104). On what or where the potential differences were measured, a far more important piece of information, she does not report. In any case, it doesn't matter, for she then tells us that no positive results were obtained with this device, and the matter is dropped. Why then the specific mention of the piece of apparatus used? Because, I believe, Rogers felt that it sounded impressive.

Martha Rogers was not put off by contradictions in her theory. For example, she says, "At death the human field ceases to exist" (91), and also, a few paragraphs later, "The field projects into the future as well as into the past." She speaks of "delineating the boundary of the human field" with measuring instruments (113) and also that "The environment is defined as all that which is external to a given human field and is thus stated to be the environmental field" (97). But she also has told us that the human field extends to infinity in all directions, so it has no boundary and nothing is external to it.

Mathematics and symbolic notation are not ignored. Rogers, without an explanation of what topology is likely to be able to tell us, says, "A fundamental question needing exploration concerns the topology of the human field" (112). She introduces equations such as $R=f(M_1 \leftrightarrow E_1)$ which "can be read as: 'Reciprocy [R] is a function of the mutual interaction between the human field [M] and the environmental field [E]'" (97). The subscripts are never explained or even mentioned. No use is made of the notation except as an alternative to words: The only apparent justification for the symbolic form is to introduce something that looks like mathematics into the book.

Last, Rogers accepts sources uncritically. "Further evidence of nature's lawfulness has come about through biorhythm research, expanded recognition of the cyclical nature of physical phenomena, and significant findings pointing up interrelationships between the two" (62). Biorhythms were a fad at the time she was writing. She also thinks that "In recent years, scientific respectability has been granted to the study of extrasensory phenomena. The existence of paranormal occurrences is well documented" (72). Perhaps often discussed, but not well documented. Scientific respectability will be granted only when the supposed phenomena can repeatably produce positive results under conditions that rule out cheating and experimenter bias, an event for which we are still waiting.

—Jef Raskin

[computer-mediated virtual reality] is not artificial as one is already everywhere since Persons [*sic*] are energy fields and energy fields are infinite" lists Elizabeth Ann Manhart Barrett RN; Ph.D.; FAAN as the author. Many aspects of nursing theory are far closer in style and substance to religious beliefs than to science; Martha Rogers wrote that there is a "critical need for a body of scientific knowledge specific to nursing" (1970, 83). She does not explain why the knowledge must be specific to nursing, but her desire to create some special nursing science is evident, and her desire for nursing to be on an academic and intellectual par with physics is clear. Starting from Glenn Seaborg's analogy that compared scientific research to mountain climbing, Rogers said, "To reach the upper altitudes [of nursing theory] requires the knowledge and tools implicit in doctoral study of stature" (1970, 112).

Until the advent of nursing theory, which allowed nurses to write papers of apparently vast theoretical scope, there was far less of a rationale for awarding a Ph.D. in nursing. By establishing a Ph.D. in nursing, academic institutions—which usually require their faculty to have doctorates—became staffed at the highest levels with nursing theorists (in accord with the use of the word "doctoral" in Rogers's quote). These theorists have a vested interest in not having their work questioned. In addition, because Ph.D. nursing theorists occupy many of the higher positions in academic settings, they control who obtains doctorates, and they exclude any skeptical students who would challenge their hegemony. It is a closed system, which can, to its own satisfaction, reject any attack from outside by pointing out that the critics do not have doctorates in nursing, and therefore do not properly understand nursing theory. The situation is such that many nurses do not go forward to a Ph.D. in nursing because they would have had to publicly subscribe to the absurd tenets of the theory, as they have reported to my wife (a nurse and a nursing supervisor who moved to nursing after studying for a Ph.D. in experimental pathology).

In my correspondence with nursing theorists, I have found them to be well-meaning. Like the vast majority of nurses, their principal desire is to do what is best for their patients. They believe that they are doing so. I would expect that they would want to demonstrate that their claims are objectively true. However, as a reading of many published papers, theses, and the perusal of hundreds of abstracts of other papers has shown me, their ranks seem devoid of people who have the necessary background to create a rational critique from within, and the system is such as to exclude those whose training allows them to see the weaknesses of nursing theory.

The Status of Nursing in the Medical Professions

As any medical intern will tell you, nurses are often the most knowledgeable people in the hospital, especially regarding patient status and treatment. At the same time they are undervalued, underpaid, have low social status, and are institutionally subservient to medical doctors and hospital management. Outside the hospital setting, their situation is not much better. This creates justifiable resentment, and helped give rise to a strong psychological impetus to create a platform for nurses where they can publish papers, do research, feel as if they are part of the cutting edge of technology, and have outward trappings comparable to that of other disciplines. Without the real possibility of a theory of nursing comparable in scope and depth to the physical sciences or mathematics, the appearance of such a theory of nursing was created.

The more you study Rogers's work, the more you see that substance is lacking. Any competent referee outside nursing would judge the overall quality of nursing research as sorely inadequate. Nursing theory, as we have seen, is built on undefined jargon and unfalsifiable hypotheses. It is a structure of self-perpetuating myths taken on faith by its practitioners. Nursing theory has become a home for New Age fallacies, "alternative medicine," and hyperbole. Unlike science, nursing theory has no built-in mechanisms for rejecting falsehoods, tautologies, and irrelevancies.

I believe that nursing does deserve academic status, and that there is valuable and valid nursing research to be done. There is justification for Ph.D. level studies in nursing, but the justification does not require a fictitious theory of nursing. Academic nursing should not be satisfied with the low standard of intellectual honesty it has set out for itself, and academic institutions should not tolerate the lack of rigor in the field. Until the Ph.D. programs in nursing are revamped, universities and colleges should look to broader qualifications for instructional positions in nursing, and downplay the importance of a Ph.D., especially those earned in Rogerian nursing theory.

Conclusions

This article has concentrated on Rogerian nursing theory because it is the most prominent and possibly the most widespread theory in the field. There are other broad theories of nursing, such as Margaret Newman's Health as Expanding Consciousness and Rosemarie Parse's Theory of Human Becoming, that I have not discussed. On the positive side, Orem's Self-Care Model presents a direction (rather than a theory) for nursing that does not exhibit Rogerian excess.

I hope that this article will help academic nursing come out of the dark ages of authoritarianism and mysticism so that it legitimately can take its rightful place in academia and in medicine.

Acknowledgments

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Sun Sign Columns

Response to an Invitation

The authors invited astrologers and interested scientists to submit ideas for testing sun sign columns. Their responses suggest that the negative results to date are unlikely to change.

GEOFFREY DEAN and ARTHUR MATHER

If the history of astrology is represented by a loaf of bread, sun sign columns do not arise until halfway through the last slice, being unknown before the 1930s. There are two types of column, namely forecasts ("Aquarius, romance improves after the 16th"), and delineations or attributes of each sun sign ("Taureans are stubborn"), which sometimes overlap ("Ariens are born to win"). Delineations include compatibility ("Geminis and Librans make beautiful music together"). Forecasts with their associated dial-a-horoscope lines are common in newspapers (daily), women's magazines (monthly), and sun sign annuals (yearly). Delineations are almost as common, but appear more in weekend supplements, women's magazines ("secrets of your man's star sign"),

and books (e.g., *Sun Signs, Star Signs, Baby Signs, Cat Signs, Diet Signs, Love Signs, Money Signs, Sex Signs, Success Signs*).

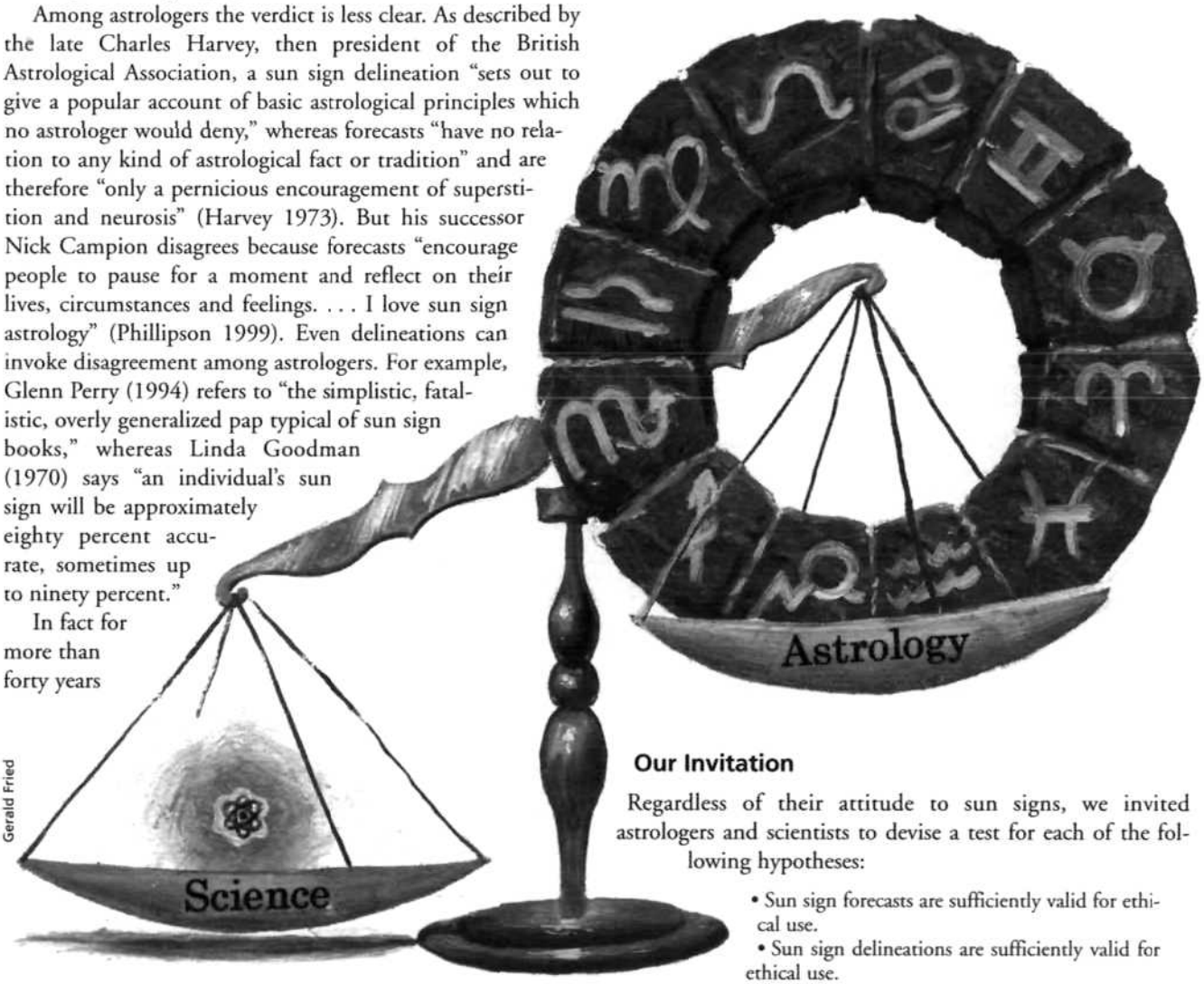
A Question of Validity

Does using sun sign astrology add validity to actual sun sign forecasts and delineations as opposed to simply making them up? Or does it merely mislead readers into believing that their "thought for the day" is more meaningful than if it appeared in, say, Kahlil Gibran books or desk calendars? The verdict from empirical tests is a clear and consistent denial of validity (see Dean and Mather 1977, 1996; and Dean, Mather, and Kelly 1996).

Among astrologers the verdict is less clear. As described by the late Charles Harvey, then president of the British Astrological Association, a sun sign delineation "sets out to give a popular account of basic astrological principles which no astrologer would deny," whereas forecasts "have no relation to any kind of astrological fact or tradition" and are therefore "only a pernicious encouragement of superstition and neurosis" (Harvey 1973). But his successor Nick Campion disagrees because forecasts "encourage people to pause for a moment and reflect on their lives, circumstances and feelings. . . . I love sun sign astrology" (Phillipson 1999). Even delineations can invoke disagreement among astrologers. For example, Glenn Perry (1994) refers to "the simplistic, fatalistic, overly generalized pap typical of sun sign books," whereas Linda Goodman (1970) says "an individual's sun sign will be approximately eighty percent accurate, sometimes up to ninety percent."

In fact for more than forty years violent disagreements over sun signs have periodically erupted in astrological journals, always repeating the same issues, rarely appealing to empirical evidence, and unsurprisingly getting nowhere (Dean and Mather 1996). As a countermeasure we had earlier ransacked the scientific and astrological literature for positive evidence but without success (Dean and Mather 1977), and had offered the world's then largest astrology prizes of $1,000 in 1980, $2,000 in 1982, and $5,000 in 1984 to anyone who could demonstrate the validity of signs, again without success (Dean and Mather 1996).

When confronted with such results, astrologers usually claim that the tests are inadequate, arguing for example that positive results await only "more sensitive and imaginative tests" (Harvey 1994), but never specifying what such tests would entail. Accordingly, in a final attempt to resolve the issue, we surveyed the history of sun sign columns, the arguments for and against, the outcome of empirical tests, and circulated the results worldwide by various means to several thousand astrologers and two dozen interested scientists. We then invited their ideas for testing sun sign forecasts and delineations.



Gerald Fried

Our Invitation

Regardless of their attitude to sun signs, we invited astrologers and scientists to devise a test for each of the following hypotheses:

- Sun sign forecasts are sufficiently valid for ethical use.
- Sun sign delineations are sufficiently valid for ethical use.

Our invitation was to devise tests, not to perform tests, so nobody had to leave their armchair. We chose the terms "valid" and "ethical" because their dictionary definitions are clear and unambiguous (valid = accurate, ethical = responsible), but

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respondents were welcome to use their own definitions (none of those proposing tests did so). Tests had to cover all twelve signs Aries through Pisces, had to include full instructions, and had to be feasible, for example they could not require samples too large to be reasonably collected. Respondents had to specify the results they would accept as disconfirming each hypothesis. We offered no prizes because our invitation was not a competition. If respondents wished, they could send in a position statement without devising a test. Most chose this option.

To make sure respondents understood what they were testing, we gave examples such as:

> *Weekly forecast:* Scorpio. After Saturn changes direction on Thursday you will feel less inclined to lead the parade (Patric Walker). *Delineation:* Leo. Usually quite popular. Generous most of the time. Can be arrogant and conceited, so can be unpopular (Aries Super Horoscope). *Compatibility:* Gemini-Virgo. Merry chatter but sexual incompatibility (Russel Grant), Your sex style matches perfectly (Mystic Meg).

If research to date cannot be much improved, then any validity commensurate with sun sign claims should have been detected by now. Second, even if sun signs were valid in ways yet undescribed, one cannot logically write columns based on undescribed properties.

Circulation and Response

Our survey and invitation were circulated between June and November 1996 by articles in astrological journals; by Internet postings on four astrology mailing lists and on alt.astrology; by direct mailout to astrologers, astrological organizations, and scientists (total $N = 115$); and by handouts at the 1996 Astrological Research Conference in London ($N = 40$). The deadline for replies was 31 January 1997.

Altogether several thousand astrologers plus many more on the Internet were reached (16 responded), and 28 scientists (14 responded). Given the typically poor response by astrologers to any kind of invitation including prize competitions to validate their claims, the result was better than expected. Notably absent despite being invited were certain astrologers critical of existing research or with a special interest in sun signs.

The thirty responses came from a total of nine countries (Australia 5, Canada 4, England 8, France 1, Germany 2, Netherlands 1, Scotland 3, South Africa 1, U.S.A. 5). Although categories overlap, the breakdown of responses was roughly 14 astrologers (1 with a Ph.D.), 11 astrology researchers (5 with Ph.D.s), and 5 skeptics (all with Ph.D.s). Of the 30 responses, 18 provided position statements and 12 suggested tests. The responses are briefly summarized below. Some are detailed in the box on page 39.

Position Statements

Of the eighteen position statements, most were similar to those already aired elsewhere (see Dean and Mather 1996), so little was new. They can be summarized as follows:

- Sun sign columns are nonsense or trivialize astrology (3 astrologers).
- Sun sign columns are for making money; validity is irrelevant (3 astrologers).
- Sun signs columns are without validity (4 scientists).
- Other negative statements (2 astrologers, 1 scientist).
- Positive statements (5 astrologers).

The positive statements can be summarized as follows: Isolating a chart factor does not make it invalid. Just as the Sun dominates life on Earth, so sun sign astrology could be superior to the whole chart. If sun sign columns seem valid then they are valid, period. Ethics and validity are personal, and not everyone sees the controversy as important. Yes, sun signs reveal the inner cat.

Perhaps the most thoughtful position statement came from University of Queensland philosopher William Grey, one of the few philosophers to have interacted with astrologers (Grey 1994) and to have initiated a national survey of belief in astrology (Grey 1992): "Astrologers have had plenty of opportunity to establish the validity of sun sign astrology via double-blind tests. That they have not done so is most easily explained by the hypothesis that they cannot do so. Sun sign astrology is not knowledge but epistemological hallucination."

Suggested Tests

Of the twelve suggestions for actual tests, most were variations on tests already performed, so again little was new. They can be summarized as follows:

- Direct tests. Are sun sign indications supported by diary records, traits, events, relationships, disease? (3 astrologers, 4 scientists).
- Discrimination tests. Can subjects pick their own sun sign reading? (1 astrologer, 3 scientists).
- Attenuation tests. Without leaving an armchair, derive plausible bounds for sun sign effect sizes after attenuation by other chart factors, by unreliability, and by range restriction. Does anything useful remain? (1 scientist).

In the first two cases the answer from existing tests is no. In the last case the test is new but the answer is also no.

Discussion

The response to our armchair invitation shows that, contrary to what some astrologers claim, designing tests of sun sign columns (forecasts and delineations) is perfectly feasible. However, although the proposed tests involved many useful ideas, they were basically no different from tests already made, and the tests designed by astrologers were basically no different from those designed by scientists. This suggests that the research to date is generally as good as it can get.

Selected Responses to Sun Sign Astrology

Of the eighteen position statements, one from Chris Turner was of particular interest because she runs the well-established Chiron School of Astrology in Sydney, New South Wales, writes a successful sun sign column for *TV Week*, and has a sun sign book *Star Struck* published by HarperCollins in 1999. Yet she is properly critical:

"Sun sign columns exist for one reason only—to help sales. So they must be entertaining, even when astrologically nothing is happening (which is when the biggest divergences between columnists occur). They must fit the space, yet paying ads always take priority. So columns are subject to attack by sub-editors, usually by pruning or by substituting short words for long ones. But columns pay well, far better than teaching or consulting or ordinary writing, and are marvellous advertising. To most astrologers they would be an offer hard to refuse. But columnists will not be hired unless they look good, write well, and deliver what the publisher wants, namely readership. Sales are everything. Astrology is secondary. Fighting sun sign columns is a lost cause because the public wants them, and because there is money to be made from them by everyone, not just the astrologer (in fact the astrologer makes the least of all). The best that astrologers can do is openly acknowledge that sun sign columns are not necessarily related to any serious astrology and are only for entertainment, so we at least maintain some credibility.

"In my experience the typical reader is female, 20–30's, and probably unfulfilled. Most readers know the difference between columns and serious astrology, and very few take them seriously, but many still think there is something in them because hits do occur even if only by chance. (The same happens in consultations, where occasionally I am given the wrong birth data yet the reading is still spot on.) The chance of a hit is of course greatly improved by being nonspecific, for example by using words like *loved one* instead of *partner,* and by avoiding events in favour of moods and their likely outcome (few people have events but most have moods), e.g., "you may be more irritable this week, so avoid arguments and take it easy." But if a column still turns out to be wrong, readers just laugh it off. More generally, they never remember what it says unless it happens to be right, which jogs their memory. Otherwise they never think about it. In ten years nobody has complained that a forecast was wrong but many have said that a forecast was right. The feedback I get is 95% positive.

"Today many sun sign columns have an associated 0055 phone line, one for each sign, which typically provide 400 spoken words versus 50 written words in the column. They attract similar loyalties with a definite hard core of users. I did a 0055 daily horoscope where all advertising suddenly ceased, yet people kept ringing for another two years until I closed it. Many of them begged me to keep it going, some of whom said they never went to work without ringing it first."

What Turner says above about language is confirmed by Aphek and Tobin (1989). They found sun sign forecasts were characterized by vague and imprecise words as in "something may be causing problems," by positive items outweighing the negative items as in "problems dissolve into enjoyment," and by general truths as in "persevere and success will come." As in all fortune-telling, the aim was to maximize acceptance, in this case by all readers. Obviously readings so based need have nothing to do with astrology.

Of the twelve suggested tests, four involved actual results as follows:

Barry Beyerstein, professor of psychology, Simon Fraser University, Vancouver. "In one of my classes several years ago I tested the local sun sign astrologer, whose column Mystic Stars appears in several newspapers in British Columbia. The test involved about seventy students aged 19–40 with a mean in the early twenties. The results showed that they could not reliably recognize their own week-old horoscope (without sign names of course) after the week's events supposedly described in the horoscope had transpired."

Susan Blackmore, Senior Lecturer in Psychology, University of the West of England. "Even if only partly true, the predictions for own signs should fit better than those for other signs. Suitable tests are given in S. Blackmore and A. Hart-Davis, *Test Your Psychic Powers*, London: Thorsons 1995: 152–156 [and are similar to that of Farha below]. In the five years since its publication no results have been sent in by readers."

Bryan Farha, professor of psychology, Oklahoma City University. "I recently tested sixty-three students aged mostly 19–25 who, after 5 P.M., had to choose which of 12 daily horoscopes best fitted their day. The horoscopes were from the *Dallas Morning News* in Texas, 300 km away, and were retyped in random order with sun sign names omitted. There were 6 hits vs. 63/12 = 5.25 expected by chance, which is not even marginally significant (binomial $p = 0.43$)."

Françoise Gauquelin, astrology researcher, Paris. "If for example Leos really are good leaders, popular, generous, and so on, then a count of the signs of persons described by such traits in their biographies should show a significant peak in Leo. But we have already made this sensitive test, and nothing in favour of signs came out of it."

Although our aim was to devise tests and not to draw conclusions about sun signs, some general comments seem possible. First, if research to date cannot be much improved, then any validity commensurate with sun sign claims should have been detected by now. Second, even if sun signs were valid in ways yet undescribed, one cannot logically write columns based on undescribed properties. Third, our respondents (and non-respondents by their failure to respond) have in effect found no reason to challenge William Grey's comment, nor the existing verdict as summarized sixteen years ago by psychologist Michael Startup (1984) as follows:

> Since the number of studies [of sun signs] that have been conducted is now quite large, the predictions [delineations] that have been tested are varied, and the data that have been sampled are voluminous, and yet the evidence is so poor, it is probably time for all to agree that enough is enough; the sun-sign idea is simply not valid.

In short, the existing verdict seems unlikely to change—a point supported by respondents who had made actual tests.

Our Call for Action

Nevertheless as a precaution we sent our findings to the leading astrological bodies in seven countries (AA Britain, CEDRA France, CIDA Italy, DAV Germany, FAA Australia, ISAR and NCGR United States, NVWOA Netherlands) and called on them to publicly declare their position either for or

against the existing verdict. Each body had the research orientation and resources to allow an informed declaration; for example the published aims of the AA included promoting "the good name and reputation of astrology among the general public, and especially within the scientific community and the caring professions," and ISAR, the International Society for Astrological Research, had published a massive 466-page anthology *Astrological Research Methods* (Pottenger 1995).

So we were confident of a good response. But after two years only two bodies had replied. NVWOA, the Dutch Society for Scientific Research into Astrology, said that in the Netherlands there had already been wide debate by skeptics on a sun sign disclaimer in the early 1990s, in which NVWOA had not participated because "disapproval of astrology on the basis of sun signs" was not justified. Therefore to avoid further misunderstanding NVWOA would not be responding to our call. NCGR, the American National Council for Geocosmic Research, said that every director had received a copy of our call but none had responded, so we could assume the NCGR "prefers neither to endorse nor condemn [sun sign columns] at this time." The British AA and Australian FAA privately acknowledged receipt but officially remained silent.

The outcome of our call for action was therefore zero out of eight. Eight astrological bodies had been put to the test and all had been found wanting. Such indifference hardly enhances astrology's reputation. If the leading astrological bodies in seven countries can show no concern for negative evidence that seems the most clear and consistent in astrology, astrologers can hardly complain if skeptics dismiss astrology (not just sun signs) out of hand.

Subsequently we submitted a more detailed version of this article to *Correlation*, the AA journal of research in astrology. The editor, Pat Harris, rejected it outright on the grounds that it was "not scientific writing and analysis." When we asked what changes were necessary for it to be accepted, she replied "There are no conditions under which I would accept your sun sign material. . . . Your article is unscientific in its presentation and analysis." In our opinion this sadly, but amply, justifies a dismissive view by skeptics towards astrology.

An expanded version of this article with all responses, an expanded version of Dean and Mather (1996), and other relevant material can be found on the Web at www.smitpotze.demon.nl/Astrology-and-Science/index.htm.

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The Psychic Staring Effect

An Artifact of Pseudo Randomization

Rupert Sheldrake claims that people can tell when somebody is staring at them. Unfortunately the sequences used in Sheldrake's research are not properly randomized. When random sequences are used people can detect staring at no better than chance rates.

DAVID F. MARKS and JOHN COLWELL

Rupert Sheldrake (1994) has written a curious book, *Seven Experiments That Could Change the World: A Do-It-Yourself Guide to Revolutionary Science.* Sheldrake proposes *An Alice Through the Looking Glass* vision of things that possibly could be so but, in all probability, are not. Doing science in a controlled and thoughtful manner is a challenging and tricky operation. This is especially true of research on the paranormal, where the claims are difficult to prove because the effects are small and unreliable. Sheldrake advocates the collective participation of amateurs and nonscientists who have the "freedom to explore new areas of research." It is certainly true that the theories and methods of science change slowly and at times scientists

do appear reluctant to accept new paradigms. Anybody capable of switching on a computer and downloading Sheldrake's Web pages can become a member of Sheldrake's army of revolutionary scientific experimenters.

Apart from their reluctance to change paradigms, it has been shown elsewhere (Marks and Kammann 1980; Marks 2000) what can happen when research on the paranormal is left purely to a few of the professionals. They can mess up badly.

The fact that starees can guess when staring is occurring at above-chance levels demonstrates nothing other than an ability to notice patterns. This is a low-level ability that even a mouse can manage.

Sheldrake encourages us to set aside our prejudices about the "prestige of professional credentials" and wait for the outcomes of his "world changing" experiments. This is an awesome prospect that we can only wait for in trepidation. Will they randomize correctly? Will they use double-blind controls? Will they prevent cueing? Will they use independent judges? Will they use proper statistical procedures? The questions go on and on, but in the end, it will be a matter for future commentators to judge whether knowledge grows faster with Sheldrake's revolutionaries or with the conventional methods of normal science. In this article we examine the early findings concerning one of Sheldrake's seven phenomena: psychic staring.

The Perceptual Theory of the Staring Effect

Rupert Sheldrake (1994) has a radically new theory of perception. Contrary to commonly held and, so Sheldrake believes, possibly mistaken assumptions, we do not see images of things inside our brains. The images, in fact, may be outside us: "Vision may involve a two-way process, an inward movement of light and an outward projection of mental images." Imagine, for example, that as you read this page rays of light are traveling from the paper and print in front of you, into your eyes, and from there into the visual processing centers in your brain. At the same time this is happening, Sheldrake suggests that your images and perceptions of these very words are projected outwards through your eyes into the world, ending up exactly where the page and print are. There is no conflict between the real page and the imaged page because they look identical and occupy the same area of space. In the case of illusions and hallucinations, the images do not coincide with the things outside us but involve projection, an outward movement of images, nevertheless.

Sheldrake's hypothetical process of outward projection of images has some interesting implications. If our minds reach out and "touch" what we look at, then we may directly affect what we look at. For example, when we stare at somebody from behind, they may be able to actually *feel* that we are staring at the back of his or her neck. This feeling of being stared at apparently gives the impression of strain or pressure from skin, muscle, tendon, and joint in or around the neck region. Titchener (1898) described the feeling as "a state of unpleasant tingling, which gathers in volume and intensity until a movement which shall relieve it becomes inevitable" (895).

There is in fact a sizable literature of experiments on "psychic staring," the fact that some people believe that they can determine when they are being stared at by another person who is not directly in their field of vision. Colwell, Schroeder, and Sladen (2000) reviewed this literature and carried out some empirical tests.

The psychologist Titchener reported the phenomenon over a century ago, and the idea that "unseen" staring can be detected has been supported in the subsequent research with incidence rates as high as 68–86% (Coover 1913), 74% (Williams 1983), and 92% (Braud, Shafer, and Andrews 1993a). Titchener rejected the idea that the staring effect was based on telepathy and suggested the hypothesis that the eye is attracted to movement and the starer's gaze is therefore attracted to the staree's head turning in his direction. This is certainly the case in everyday life. One of us (DM) well remembers a staring incident when his son Michael was about eight years old. Michael became disturbed one day as we were walking along a neighborhood street that people were staring specifically at him. I asked Michael how he knew that unless he had already been staring at them! Michael's feeling of being stared at disappeared shortly after that. Similarly, Titchener attributed the cause of the feeling of being stared at to the staree, not the starer, and so the attribution of causality to the starer is false, a misinterpretation (Colwell, Schroder, and Sladen 2000).

Sheldrake has conducted new experiments on the staring phenomenon and encouraged school children and other members of the public to participate in his research program. Experimental kits can be downloaded from the *New Scientist* Web site, including an interesting list of twenty-four "random" sequences for use in experimental trials. Sheldrake suggests that each child in a group be tested with a different sequence or use sequences determined by tosses of a coin. The results are being compiled by Sheldrake into a pooled data set.

There are two basic methods that Sheldrake's revolutionary experimenters are expected to use:

1. Pairs of schoolchildren divide into starers and starees with the starer sitting at least one meter behind the staree. Using random number sequences and a method for signalling trials such as a "clicker," the starer signals the start of each of a sequence of twenty trials. The staree wears airline blindfolds, and responses are recorded on data sheets by the starer. After a block of twenty trials, the two children change roles.

2. Starers and starees are isolated with starers inside and starees outside of the school building.

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Early results reported in the British newspaper *The Sunday Telegraph* (Matthews 1997) obtained from 18,000 trials with schoolchildren suggest that non-staring trials produce chance guessing by the starees, whereas staring trials produce a 60 percent accuracy rate, a statistically significant result.

New Staring Studies

One of the authors (JC) decided to put the Sheldrake findings to rigorous test under controlled laboratory conditions (Colwell, Schroder, and Sladen 2000). On the basis of Sheldrake's observations, it was decided to investigate the staring effect both with and without feedback. Two new experiments were carried out at Middlesex University.

Experiment One

Twelve volunteers, seven men and five women, who believed in the staring detection effect, were tested individually in a situation where they were stared at (or not) through a one-way mirror while sitting with their back to the mirror. Sheldrake's original sequences were downloaded from the *New Scientist* Web site and used to guide staring and non-staring trials. Each participant received the first 12 sequences in the same order, with 20 trials in each sequence. The beginning and end of each trial was signaled to the staree on a monitor, after which he indicated whether or not he thought he was being stared at by pressing one of two response buttons. No feedback was given on the accuracy of each trial for the first three sessions (60 trials), but on the remaining nine sequences (180 trials) the word "correct" or "false" appeared after each response. The results are summarized in table 1.

	Non-Feedback Trials			Feedback Trials		
	Stare	No Stare	Total accuracy	Stare	No Stare	Total accuracy
Avg.	16.4	13.5	29.9	53.7	45.0	98.7
MCE	15.0	15.0	30.0	45.0	45.0	90.0

Avg.—Average
MCE—Mean Chance Expectation

Table 1. Overall accuracy scores in Experiment One (Colwell et al. 2000).

The results showed that with no feedback, no significant results were obtained. With feedback, however, there was statistically significant above-chance accuracy, with 98.7 correct trials compared to a Mean Chance Expectation (MCE) of 90.0 ($p<.001$). On the surface, these results appear to confirm Sheldrake's original findings. However, the different results obtained with and without feedback suggested that there could be another "normal" explanation of these data.

The starees may have been learning something useful about the sequences as a result of the feedback. If the sequences used to generate the trials were not perfectly random then they could have a predictable patterning in their structure. It is sometimes the case that experimenters use pseudo-random sequences rather than truly random ones (Brugger, Landis, and Regard 1990). This enables the experimenter to equalize the number of trials in two different experimental conditions (e.g., stare versus non-stare) and means that the starees may have been able to learn the sequence structure from the feedback. Such learning will increase with exposure, and to test for this possibility the twelve sessions were divided into four blocks of three sessions each (table 2) and accuracy scores were compared across the four blocks of sessions.

Block	Stare Avg.	Stare Sig. Level	No Stare Avg.	No Stare Sig. Level	Total (Stare + No Stare)	Total Sig. Level
1	16.42	NS	13.50	NS	29.92	NS
2	17.25	.009	13.67	NS	30.92	NS
3	17.75	.001	15.33	NS	33.08	.002
4	18.67	.0001	16.00	NS	34.67	.001

Avg.—Average Sig.—Significance NS—Not Significant

Table 2. Average accuracy for staring and nonstaring trials across the four blocks of 60 trials each (Colwell et al. 2000).

The results in this table show clear support for the hypothesis that *learning* has taken place. The average level of accuracy improves from block 1 (no feedback) through blocks 2–4 (with feedback). This can be seen in the gradually increasing accuracy (see columns 2 and 6).

This suggests that Sheldrake's "random" number sequences actually contain structure, or bias, and therefore an analysis of them was undertaken. The number of repetitions in a sequence of 20 binary events should be 9.5 (Wagenaar 1970, 1972). The numbers of repetitions in Sheldrake's 12 sequences are: 6, 6, 6, 8, 8, 8, 8, 9, 9, 7, 7, 7, averaging 7.42, and this is below chance level. The average probability of a repetition is 0.39, well below what would be expected in a truly random sequence (0.50). Another way of analyzing the patterning in the sequence trials is to divide the series of stare (S) and no stare (N) trials into the eight possible trios or "three-tuples" of trials, e.g., SNS, SNN, SSN, etc. (Rapoport and Budescu 1997). In theory a random sequence should contain an equal number of the eight kinds of three-tuples giving each of the eight a probability of 1/8 =.125. The frequency of each trio was analyzed across the 12 sequences. There were huge deviations from a random distribution with many more alternating sequences (SNS and NSN) than there should have been and far fewer sequences of SSS and NNN. The deviation from randomness was highly significant ($p<.001$).

It appears likely that the subjects in the staring research are able to score above chance as a consequence of being able to learn the non-random patterns in the sequences using the feedback. This idea receives support from the literature on "implicit learning," which suggests that the learning can take place incidentally without conscious awareness (Reber 1989). There is a huge literature on "probability learning" that suggests people are very good at learning the global and local probabilities in the patterning of events (e.g., Servan-

Schreiber and Anderson 1990). The tendency of the participants to avoid multiple repetitions was well matched by Sheldrake's sequences that showed exactly the same property. The fact that starees can guess when staring is occurring at above-chance levels therefore demonstrates nothing other than an ability to notice patterns. This is a low-level ability that even a mouse can manage. However, it could be argued that improvement was not due to learning, but to an increase in sensitivity to unseen staring with repeated exposure —that is, a paranormal explanation. A critical test of the two explanations was to rerun the experiment using genuinely random sequences. Improving performance would support the paranormal explanation whereas an implicit learning explanation would predict failure to beat the mean chance expectation (MCE).

These data suggest that there is no evidence of a general ability to detect unseen staring when the staring and nonstaring trials are properly randomized or when no feedback is provided.

Experiment Two

Colwell, Schroder, and Sladen repeated the experiment with one main difference. Ten *properly randomized* sequences taken from random number tables were used instead of Sheldrake's nonrandom sequences to guide staring and nonstaring episodes. Tests of randomness were carried out and passed. Feedback was given in all sessions, the first one of the ten being purely for practice. *In this case no improvement in guessing rates occurred over the three blocks of trials.* The results of this experiment support the hypothesis that the improvement in accuracy during staring episodes observed in experiment one was due to pattern learning. When no feedback was provided and pattern learning was blocked (experiment one, blocks 1–3) no ability to detect staring was observed and also no learning. These data suggest that there is no evidence of a general ability to detect unseen staring when the staring and nonstaring trials are properly randomized or when no feedback is provided. The only positive results were in the context of feedback and the nonrandom sequences generated by Sheldrake.

Sheldrake has made little attempt to control for sensory cueing in his research, but some studies have solved the problem by increasing physical separation. For example, Williams (1983) linked starer and staree (in rooms sixty feet apart) by closed circuit television. Following a random number sequence, the monitor in the starer's room would come on for 12-second periods, enabling him to view the staree, and these constituted the staring periods. Presumably 12-second nonstaring periods were also provided. A positive detection effect was obtained. No feedback was given, and so implicit learning would not be possible. However, as in Sheldrake's research, randomness of sequences was not controlled for, and the possibility of a matching in bias between experimental and response sequences exists, which could lead to increased accuracy (Gatlin 1977).

Explanations in terms of sequence randomness would not account for the positive results obtained by Braud, Shafer, and Andrews (1993a, 1993b). This research used a setup similar to that of Williams (1983), except that the measure of detection was physiological—spontaneous phasic skin resistance response (SSR), which measured sympathetic autonomic nervous system arousal. However, the robustness of Braud et al.'s findings is open to question, since some replications have found the effect (Schlitz and LaBerge 1997), while others have failed (Wiseman and Smith 1994; *Wiseman et al. 1995). Collaborative* research by Wiseman and Schlitz (1997) using the same methodology, the same equipment, in the same location, at the same time, drawing participants from the same pool, resulted in evidence of a staring detection effect for Schlitz (a psi believer) but not for Wiseman (a skeptic). Possible reasons for these experimenter effects are discussed, though no firm conclusions are drawn, and further research on this experimenter effect is recommended.

However, as both Colwell, Schroder, and Sladen (2000) and Baker (2000) point out, the detection of staring at a *subconscious* level provides no support for claims by Sheldrake and others of a *conscious* awareness of being stared at in the absence of normal sensory information. Baker's recent research, which included "informal staring" at individuals in everyday situations before asking them if they had been aware of being stared at, and laboratory sessions in which subjects acted both as starers and starees, provided no empirical support for a conscious ability to detect unseen staring.

Summary

Sheldrake has made the bold claim that people are able to consciously detect unseen staring at above-chance levels. Unfortunately the sequences he has used in his research are completely unsuitable. They follow the same patterning that people who guess and gamble like to follow. These guessing patterns have relatively few long runs and many alternations. The biased nature of Sheldrake's sequences has several unfortunate implications. First, it leads to implicit or explicit pattern learning when feedback is provided. When the patterns being guessed mirror naturally occurring guessing patterns, the results could go above or below chance levels even without feedback. Thus significant results might occur purely from nonrandom guessing. The *New Scientist* Web site is disseminating Sheldrake's nonrandom sequences to young people and other amateur scientists all over the world. This may be having an unintended negative influence on scientific education and rigor among some of society's most motivated and

THE PSYCHIC STARING EFFECT
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Management of Positive and Negative Responses in a Spiritualist Medium Consultation

Analysis of two spiritualist medium consultations reveals the medium's strategies to elicit positive responses from the client and to manage negative responses.

PETER GREASLEY

When the British television documentary program "Everyman: Is There Anybody There?" (BBC1: November 22, 1998) included two consultations by a professional spiritualist medium, the clients expressed unequivocal satisfaction with the performance. After the first consultation, in which a mother and daughter were seeking contact with the mother's deceased husband, both agreed that the medium was "marvelous," "very good," "excellent"; according to the mother, the medium had described her husband "to a T," he was "spot on." After the second consultation, in which a woman was seeking contact with her deceased brother, the client similarly agreed that the medium was "very good," adding that he "hit on what I

really wanted to hear about my brother."

Assuming that the medium was not actually channeling information from the clients' deceased relatives in spirit, how do we account for his impressive performance? A client's satisfaction is dependent upon the medium's ability to provide information about the deceased relative. Thus, if a client accepts most of what the medium has said as being true or relevant, he or she will naturally reflect upon the consultation as having provided persuasive evidence that the medium has indeed been channeling information. What this analysis will show, however, is the *strategies* employed by the medium (consciously or not) to elicit positive responses (affirmations of truth or relevance) from the client, and to manage negative responses (where the truth or relevance of a statement is not affirmed). Some of these strategies will probably be familiar to readers, while others (strategies 4, 6, and 7) become clear through examination of the discourse and context of the reading.

Strategies to Elicit a Positive Response

Strategy 1. Present information that has good odds of being true or relevant to the client.

Examples:
1) I think he would have been a bit hesitant about this sort of work [spiritualism] wouldn't he?
2) Did you actually talk about moving at one stage?
3) Have you had trouble with your back as well?

Although each of these questions received an affirmative response from the client, it might be assumed that: 1) most people would admit to being "a bit hesitant" about contacting the dead; 2) most people have talked about moving *at some stage* in their lives (particularly after the death of a spouse); and 3) most people have had some trouble with their back—particularly older people, as this client was (in answer to this question, the client replied, "a little bit—yes").[1]

Strategy 2. Make indefinite references to events, people, or objects, the relevance of which may be substantiated by the client.

Examples:
4) Is there a birthday in the family coming up?
5) I don't know if you could understand that someone would have suffered with cancer?
6) Who's been divorced?
7) He's mentioned a bungalow as well.

In these examples we can see how information that has a good chance of being true or relevant to the client (strategy 1) is combined with indefinite references to events, people, or objects in order to elicit a positive response from the client (all were affirmed as relevant). Thus, for most people there will be a birthday in the family coming up (in the next few days, weeks, or months), just as most people will know of someone who has suffered with cancer, who's been divorced, or lived in a bungalow.

In the following excerpt the medium, having previously established that the relevant link in the spirit world was a gentleman who suffered with cancer, goes on to *ask* if this is with a "dad connection."

Excerpt 1. Mother and daughter seeking contact with the mother's deceased husband

Medium: So far he says I'm here—is this with—Dad connection?
Daughter: My father.
Medium: And your [to mother] husband.
Mother: My husband—yes.
Medium: Well he says can he send his love to you. . . .

Notice how the daughter responds "my father," thereby substantiating a speculative guess as the mother's husband: the "dad connection" could have applied to the mother's father or the daughter's husband if she had a child.

Strategy 3. Provide banal information, the truth or relevance of which would be acceptable to most people.

Excerpt 2. Mother and daughter seeking contact with the mother's deceased husband

Medium: But he was ill for a period with cancer.
Mother: (Nods head in confirmation)
Daughter: (Nods head in confirmation)
Medium: But he did go quickly at the end didn't he?
Daughter: Yes.
Mother: Yes.

In this excerpt the medium is providing banal information on two counts: 1) all people suffering from cancer are ill for a period (the fact that he had cancer was already established); and 2) irrespective of the period of illness, people do "go quickly at the end."

The following examples provide an illustration of banal statements relating to the mother's physical and psychological state subsequent to the death of her spouse.

8) I know it's been very difficult for you at the moment.
9) And it's been very hard to come to terms with [i.e., death, of spouse].
10) And you know it's so hard to get yourself motivated isn't it?

The next two examples illustrate the Barnum effect (personality statements that most people would accept to some extent as being applicable to themselves):[2]

11) You try to bottle things up and don't always let people get close to you in that sense do you?
12) He says you can be quite stubborn at times you know.

Strategy 4. When a tentative suggestion is affirmed, strengthen the assertive force of the information ("post-affirmative boosting").

Excerpt 3. Mother and daughter seeking contact with the mother's deceased husband

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Medium: I think he would have been a bit hesitant about this sort of work [spiritualism], wouldn't he?
Mother: Yes.
Medium: He'd have thought it was a load of rubbish wouldn't he?
Daughter: Yes he does.
Mother: (Nods head)

Once the mother has confirmed this hedged question, the original suggestion of the deceased being "a bit hesitant" about spiritualism is transformed into him thinking it's "a load of rubbish." A similar example is provided in the following excerpt:

Excerpt 4. Woman seeking contact with her deceased brother

Medium: But with the gentleman—he must have gone rather quickly, didn't he?
Woman: Yes he did—*very.*
Medium: 'Cause he says I was here one minute and gone the next—so you understand it all?

When the client adds that the gentleman went "very" quickly, the medium's initial suggestion of "rather quickly" is transformed into "here one minute and gone the next."

Strategy 5. Compliment the deceased's character.

In the following examples the medium compliments the deceased's character:

13) Because he had this lovely sense of humor didn't he?
14) A lovely bloke up here—can you understand it?
15) Because he was one of life's characters, wasn't he?

The clients, unsurprisingly, affirm these observations.[3]

The Management of Negative Responses

Strategy 6. When faced with a negative response relating to the truth or relevance of information, attenuate the assertion.

Excerpt 5. Woman seeking contact with her deceased brother

Medium: He wouldn't have believed in this [spiritualism] though, would he?
Woman: Erm [rising pitch].
Medium: He'd have thought about it, he says.
Woman: He might have thought about it though.

It is interesting to compare the medium's response here with that provided in excerpt 3 where the mother *agreed* that her deceased husband would have been "a bit hesitant" about contacting a spiritualist. The medium responded by strengthening the initial statement: "He'd have thought it was a load of rubbish, wouldn't he." In this consultation, however, when a similar statement is responded to with a hesitant "erm" from the client, the assertion is immediately attenuated.[4]

Excerpt 6. Mother and daughter seeking contact with the mother's deceased husband.

Medium: He did swear sometimes as well didn't he?
Mother: No (firmly—shakes head).
Daughter: No (firmly—shakes head).
Medium: (Holds up finger) Sometimes—he says—not to—they won't allow me to do it.
Mother: We never heard him.
Medium: No—that's why he's saying to me "I'm not allowed to say those words"—can you understand it?—It's just his character coming through 'cause he wouldn't allow me to do it—but it was just a bit of fun—'cause he had this lovely sense of humor didn't he?

When the medium suggests that the deceased "did swear sometimes," this is met with a firm "no" from both mother and daughter. The medium responds by emphasizing "sometimes," adding that "they won't allow" him to swear. So, when this odds-on guess failed (most people swear *sometimes*—though the implication is that he swore routinely), the medium's strategy was firstly to *attenuate* it by placing stress on the "sometimes," after which he says that the deceased didn't swear in front of them because they won't allow it. But if they didn't allow him to swear, and they never heard him swear, it seems rather odd that the "spirit" should have raised this issue. Notice how the medium concludes by *trivializing* the whole issue, saying that this was just a bit of fun, and *shifts the topic* by complementing the client's "lovely sense of humor."

Excerpt 7. Woman seeking contact with her deceased brother

Medium: Did you actually talk about moving at one stage?
Woman: (pause) Erm.
Medium: Well, he says that you were a bit unsettled at one stage.
Woman: (no response)
Medium: You thought about having a change—not particularly moving. . . .

When the medium asks the client if she had talked about "moving at one stage," this is met with a hesitant "erm" from the client. The idea of actually moving is then *attenuated* to being just "a bit unsettled at one stage" (which would not be unusual for most people—especially after a bereavement). However, when the client fails to offer any semblance of support to this suggestion, the medium starts backtracking: "You thought about having a change—not particularly moving."

Strategy 7. When faced with a negative response relating to the truth or relevance of information, extend the reference.

Excerpt 8. Mother and daughter seeking contact with the mother's deceased husband

Medium: Who had the caravan as well at one time?
Mother: (no response)
Daughter: (no response)
Medium: That's in the family—it's nothing to do with you two—so if someone in the family had a caravan. . . ?
Mother: (pause) Erm [our/their] Lisa's [got/had] a caravan [addressed to daughter].
Medium: That's ok—so he's having a look at what *they've got* as well.

When neither the mother nor daughter is able to affirm the relevance of a caravan (an "indefinite reference"), the medium extends the reference: "it's nothing to do with you two—so if someone in the family had a caravan. . . ?" When the mother eventually locates a possible name that is suggested to the daughter (barely audible), the medium interjects with "that's OK," as if to say that such a tenuous link will suffice, adding "so he's having a look a what *they've* got as well" (any port in a storm?).

In the following excerpt the medium makes his first attempt at identifying the relevant contact in the spirit world.

Excerpt 9. Woman seeking contact with her deceased brother

Medium: [Would you have sense of] a child in spirit?
Woman: (No response, shifts posture)
Medium: Not with you.
Woman: Not with me.
Medium: But [inaudible] before (shakes hand to indicate "something like").
Woman: I—have a small one [child] (nods).
Medium: 'Cause there was problems before with all this—and I think there must have been a child at one time?
Woman: (no response)
Medium: 'Cause I can just hear someone crying in the background—so obviously that's going back quite a while.
Woman: Yeh (uncomfortable expression).
Medium: But there is a lovely gentleman here as well.

When the medium asks the client if she would have "sense of a child in spirit" she shifts awkwardly with no immediate response. The medium immediately interjects "not with you," thereby extending the reference beyond the client. He then tries to relocate the reference in time, hoping that she can find some relevance with a child in the past, but all she can do is add that she has a small child herself. He then suggests that "there must have been a child at one time," which again fails to elicit a response from the woman. Still unable to establish any relevance, the medium attempts to repair the situation by saying that he can hear someone crying in the background, "so obviously that's going back quite a while," and changes tack by introducing a "lovely gentleman."

It is important to see the following example in the context of what has preceded it. The medium has not yet identified the desired spirit contact to the client (her brother). He started by suggesting a "child in spirit" (excerpt 9), which found no relevance, after which "a gentleman" was suggested, and affirmed. During the course of the consultation it was further affirmed that the gentleman is "special to her," that he "went quickly," and that he "wasn't old when he left us." The client merely confirmed these suggestions without offering further information on the identity of the relevant contact. In the following excerpt the medium attempts, once again, to establish the identity of the spirit contact.

Excerpt 10. Woman seeking contact with her deceased brother

Medium: 'Cause this gentleman's around you and he's always with you there—can you understand it?
Woman: Yeh.
Medium: So he says I'm *always there.*
Woman: Yeh.
Medium: First of all I want to hold your hand with him for some strange reason with him and this would make sense to you?
Woman: Yes it does.
Medium: But he is special to you?
Woman: Yes.
Medium: And he is family to you?
Woman: Yes (smiling).
Medium: Is this with a marriage connection?
Woman: (smile frozen)—No (disappointed expression).
Medium: (pause) But, er, who's been divorced though?
Woman: Erm (eyes raised—puzzled expression).
Medium: 'Cause he's on about divorce as well.
Woman He was divorced (nodding).
Medium: He was divorced—you understand it?
Woman: Yeh.
Medium: Ok—as long as I'm getting it right.

When the medium says to the client, "I want to hold your hand with him for some strange reason—and this would make sense to you?," the client responds that it does make sense. The cynic might observe that an affirmative answer to this question would provide a further clue as the identity of the "spirit," i.e., confirming an intimate relationship. With no tangible information forthcoming from the client, the medium repeats (for the third time) that "he is special" to the client. When it is further confirmed that he is family, the medium finally asks/suggests, "Is this with a marriage connection?" So, having established that the desired link was special to the client, not too old when he died, that they would hold hands, and that he is family, the medium suggests, in this hedged, ambiguous way (an "indefinite reference") that this is her husband. But he is wrong, and the fact that he is wrong produces an uncomfortable frozen smile and shifting posture from the client, who says "no."

The medium attempts to retrieve the situation by *extending the reference* when he asks, "but who's been divorced though?" Again, the client is looking puzzled. But when the medium adds, "he's on about divorce as well," the client says that *he* (her brother) was divorced, to which the medium concludes "*He* was divorced—you understand it." The impression is that she was at fault for not recognizing the divorce connection; but of course, like him, she was presumably still thinking about his suggestion of a marriage connection, which at this stage has now been totally backgrounded. Indeed, despite the fact that there is no "marriage connection" between the client and her deceased brother, the whole episode closes on a positive note for the medium who sums up by saying "as long as I'm getting it right."[5]

In the following excerpt, the medium has still not managed to identify the relevant spirit contact and tries the name "David."

Excerpt 11. Woman seeking contact with her deceased brother

Medium: Does David mean anything to you?
Woman: (no reply—eyes raised)
Medium: These are his acquaintances—David—'Cause he was a very popular young man you know.
Woman: Oh yes.
Medium: And he knew everyone.
Woman: Yeh.
Medium: So you understand it. . . .

When there is no response from the client to the name "David," the medium *extends the reference*, explaining that here we are talking about his *acquaintances* "'Cause he was a very popular young man you know." (But it seems rather odd that the spirit is providing the names of acquaintances,

rather than mutual friends whom she *would* have recognized.) Notice that, when she affirms that he was a popular young man, and that "he knew everyone," the medium adds "so you understand it," thus receiving a further affirmation from the client despite the fact that the name "David" had no significance to her.[6]

Conclusion

It is relatively easy, with the benefit of a video recorder and a skeptical demeanor, to analyze the strategies used by the medium (consciously or not) to elicit a high ratio of positive responses from the client.[7] We have also seen how the medium was able to manage negative responses in such a way that they did not detract from his credibility as a provider of information from the spirit world. But for a client who feels the need to visit a medium, such performances are undoubtedly impressive, and few can blame them for leaving the consultation expressing unequivocal satisfaction. No doubt many of the viewing public would have shared in their admiration of the medium's special gift.

Notes

1. According to the UK National Back Pain Association "almost two in three people suffer back pain each year." The medium may, of course, simply have observed a back problem.

2. Dickson and Kelly (1985) provide a review of the literature on the "Barnum Effect" in personality assessment.

3. In Hyman's (1977) list of techniques for character reading, the golden rule is "Tell the client what he wants to hear." Complimenting the deceased's character and providing reassuring information about the deceased being in the spirit world may be subsumed within this general strategy.

4. Hyman (1977) recommends that the successful character reader should have a list of stock phrases that can be used to "fill in time as you formulate more precise characterizations." This question relating to the deceased being hesitant about spiritualism was used in both consultations, as was "he must have gone rather quickly (at the end)" and "did you talk about moving (at one stage)."

5. This episode provides an illustrative example of the way in which a character reader can place responsibility for success of the consultation on the client's ability to find relevance in the information provided. As Hyman (1977) points outs in his advice to the character reader: "Emphasize that the success of the reading depends as much upon his sincere cooperation as upon your efforts. You are not on trial—he is."

6. The medium did eventually identify the desired link in the spirit world as the client's brother, which on first hearing appeared very impressive. On reflection, however, this was largely a process of deduction from the accumulation of information built up during the consultation. Thus, by the time he announced that the deceased "is uncle to your [son] Daniel isn't he?," the medium had gained the following information: he is a gentleman who is very special to her; not her husband; *he's* been divorced; he is family and knew her young son; and he wasn't very old when he died "very" quickly.

7. As Hyman (1977) has pointed out, the character reader may not actually be conscious that he is deceiving the client, but may be a victim of his own apparent success.

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THE PSYCHIC STARING EFFECT
from page 44

enthusiastic young scientists. It is also vicariously increasing the likelihood that thousands of amateur investigators all over the world could be misled into paranormal beliefs by their potentially spurious findings. This is surely not what the magazine intended. The evidence reviewed here provides no support to the claim that people can consciously detect unseen staring.

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The Laws of Nature

A Skeptic's Guide

Awareness of the fundamental laws of nature is essential to any skeptical endeavor. These principles are presented so they can be understood, and explained to others, without assuming specialized prior knowledge.

ZORAN PAZAMETA

Anyone who has studied physics (the science of the laws of nature) knows how daunting the task is of learning the philosophical and mathematical formalisms needed to fully comprehend, express, and apply natural laws. Complicating this situation is the fact that some of these laws are still "under construction"—being debated by the scientific community. Moreover, today we have *two* fundamental approaches to studying the natural world (quantum theory and Einsteinian physics), built from completely different basic assumptions (Sachs 1988). Fortunately, in the macroscopic ("real") world, the subject of this article, physics has revealed to us definite rules by which nature always operates—rules for establishing what is

physically possible and for eliminating the impossible. We have confidence in these laws because with all the observations and experiments that have been (and continue to be) performed, no exception to them has yet come to light; that is, they constitute the best explanation of the natural world available to us today. At this point, one could ask: Why do these laws exist in the first place? The answer to this question is beyond the reach of science; all we know is that we can identify natural laws, observe them in action, and use them to explain and predict natural phenomena. This is what Einstein meant with his famous statement, "To me, the most incomprehensible thing about the universe is that it *is* comprehensible" (my emphasis).

Arguably the most fundamental of these laws is one due to Einstein himself, though it isn't a law about the behavior of nature but, rather, a law about natural laws themselves.

Principle of Universality

The Principle of Universality says that all laws of nature must work the same way *everywhere*. That is, the laws are objective; it doesn't matter *who* does the experiment or *where*, the same results should be produced under the same conditions. This is why knowledge of, say, biology, chemistry, and the forces of nature in our part of the universe allows us to outline the potentialities and limitations of life and space travel in other regions. Since the speed of light (c in the equation $E=mc^2$) is the speed limit for travel and signal propagation here, it is also the (extensively verified) limit everywhere else; no matter how advanced spacefaring technology may be on other worlds, their inhabitants are still condemned to travel the vast reaches of interstellar space, for many thousands or millions of years, at speeds below c. (And as for "wormholes," those hypothetical shortcuts through space, they are pure theoretical abstractions possessing serious conceptual difficulties—including violation of several of the laws outlined below—as well as insurmountable practical ones.)

Principle of Causality

Causality states that causes must exist for all effects, and must come *before* the effects they produce. Parents must be born before their children; they cannot be born after them. In Einstein's physics causality holds in all domains of the natural world, but quantum theory allows for violation of micro-causality at the (microscopic) quantum level. In our macroscopic world, however, causality holds absolutely. This is one important reason why time travel is impossible; to go backwards in time means reversing every cause-and-effect event in the entire universe between then and now. Apart from the obvious practical difficulties, this would entail violations of other fundamental natural laws—such as conservation (see below)—if the *traveler's own birth* (or other specific event) was not to be reversed! (True, solutions of certain equations for travel at speeds exceeding c *do* allow a reversal of the direction of time, but this is physically meaningless because the particles which could exist in such a world—named *tachyons*—would not be real; they have imaginary masses!)

It is also important to remember that the connection between a cause and its effect must be a legitimate consequence of natural laws. Pseudoscience frequently misapplies irrelevancies (such as simple coincidence) to imply such a connection, then brings in untestable (therefore scientifically meaningless) supernatural agents to connect cause and effect.

I should also mention that a system that is too complex for us to model with cause-and-effect relations (for example, a roomful of air molecules) is usually studied using statistics and probability. This approach has been called the "mathematical theory of ignorance" (Kline 1964) because we use it where we can't follow (are ignorant of) the physical behavior of every specimen in the system. The statistical treatment bypasses the details of how the natural laws affect each individual particle, and instead gives us information about the state of the *whole* system; it's therefore *descriptive* rather than *explanatory*. However we investigate it, though, the behavior of every component of our system is still governed by the same natural laws as the rest of the universe.

Law of Extrema

Simply put, the Law of Extrema states that all natural processes act to *extremize* (maximize or minimize) a physical quantity. (In mathematics, an extremum—plural, *extrema*—is the maximum or minimum of a function.) An especially important instance of this (related to the Law of Entropy, below) is the principle that all systems, by themselves, tend toward a state of minimum energy. This explains many phenomena in nature including the deaths of all organisms as well as of stars, water running downhill by itself but not uphill, the temperature of a hot object decreasing to that of its surroundings, and all possible chemical reactions—from the formation of atoms into molecules and molecules into matter, to combustion of fuels, to metal rusting, to metabolism in living beings. This is why the dead do not spontaneously come back to life, and why one cannot make an engine that uses water (the "ashes" from combustion of hydrogen and oxygen) as fuel. A further example comes from Einstein's theory of general relativity, where all bodies influenced by gravity move along paths of maximum or minimum length, called *geodesics*. And all of geometrical optics (the study of light moving through macroscopic media) derives from Fermat's principle: Light follows the path for which time is a minimum.

Conservation of Matter and Energy

In general, conservation means that in an isolated system a given physical quantity does not change with time. (If you do have outside interference, it can be included by extending

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the definition of the "system" and conservation will still hold.) An especially important and useful conservation law is that matter and/or energy are neither created nor destroyed over time; they merely change form, and their sum total always remains the same. For example, the chemical energy of a quantity of gasoline is changed into the same amount of kinetic energy in a moving car. Braking to a stop converts this kinetic energy into the same amount of heat energy in the brakes, and this increases the heat of the ambient air by, again, the same amount. You can of course add in external effects of air resistance, friction with the road, and so on; the grand total will still equal the initial energy released by the gasoline. And the total mass of air and gasoline ingested by the engine equals the total mass of the exhaust products. Consider now the erroneous belief that electric automobiles run on "free" energy. The vehicle's kinetic energy comes from electrical energy made elsewhere, predominantly from conversion of chemical energy in fossil fuels or thermal energy from a nuclear reactor. And these processes produce waste, so cars (and other devices) running on electrical energy usually aren't truly "pollution free," either!

Many people claim that ghosts from time to time leave their nonphysical realm to appear here in ours. If they can interact with our material environment (by becoming visible to human eyes or cameras, causing objects to move, and so on), they must be at least partially composed of matter themselves (since it's observational fact that only matter produces the radiation, gravity, and mechanical forces that affect other matter). Therefore, by disappearing from their domain and appearing in ours, they violate conservation of matter (and energy) in *both* worlds! And in ours, this simply cannot occur.

Law of Entropy

The concept of entropy is still being actively debated by philosophers of science and is difficult to convey, so what follows is my own working definition. I find it useful to define an increase or decrease in entropy as a loss or gain in any one, two, or all three of these properties of a system: order, information, and available energy. The Law of Entropy then states that, in any real-world situation, entropy irreversibly increases for an isolated system.

Consider an ordinary piece of photocopy paper. There is a certain amount of order to it (its geometric shape, uniform thickness, and so on). It also contains information, since all of its particles reside within its clearly defined form and have definite locations within it. It also has some available energy, since we can burn it to produce heat and light. Suppose we now do ignite this piece of paper and let it burn completely. Order has been lost because there is no longer a nice rectangular shape to the material, and the particles have dispersed. Information is lost because we no longer know where a given particle is; most have in fact broken up into smoke and ashes. And available energy is lost too, because the heat and light have dissipated into the environment and the burnt remains possess far less available energy than the paper did. In sum, entropy has increased.

But can we "recombine" the fire, smoke, and ashes by reversing every microscopic process involved in the combustion and reconstitute the paper? In theory, yes—but only through *external* efforts; one consequence of the Law of Entropy is that the paper (like any isolated system) will not spontaneously regenerate itself. In practice, of course, this would be an unfeasible task, so the burning of the paper remains an irreversible process. The same holds, for example, for the death of any living being.

All living creatures take in energy from their surroundings to offset the natural tendency toward increasing entropy (and its ultimate consequences, death and total decomposition). But while this allows for small-scale, individual growth in size and complexity (increasing order, information, and available energy, meaning a local *decrease* in entropy), the entropy of the ambient as a whole *increases*. As the Sun emits energy into space, its entropy increases irreversibly. A plant uses a tiny fraction of this energy, and chemicals from its environment, to decrease its own entropy as it grows. Put the plant in an airtight, lightproof container, though, and this now-isolated system will quickly succumb to the Law of Entropy: It will die and decompose as it approaches its maximum entropy state.

Another consequence of the Law of Entropy is that all real-world processes, biological or otherwise, must produce some waste in the form of cast-off energy (and, often, matter also). However small this waste may be, it is never zero—that is, no natural or man-made process can ever be 100 percent efficient. The human metabolism, for example, is only about 50 percent efficient; half of the energy we derive from food and oxygen intake becomes waste heat. Clearly, the Law of Entropy rules out practical perpetual-motion machines whose efficiency is by definition 100 percent, not to mention those miraculous "free-energy" machines that, on their own, produce more energy than they consume (thus exceeding 100 percent efficiency).

We conclude by noting that the Law of Entropy can be stated in terms of the Law of Extremes: All natural processes act to maximize the entropy of a system. As we have seen, any such system can temporarily sustain itself from the energy cast off by another system as it progresses towards its own state of maximum entropy, but ultimately the entropy of the entire ambient must irreversibly increase. This offers another argument against time travel (as well as, for example, resurrection of the dead), since all of the myriad processes and events that elapse between any two dates (such as the beginning and end of the dying process) are, for all practical purposes, irreversible. (Some philosophers connect this with the concept of the arrow of time.) It indeed appears that the ancient Greek thinker Heraclitus was right: You can never step into the same river twice.

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'100% True! This Is Not a Joke!'

BENJAMIN RADFORD

The Truth Never Stands in the Way of a Good Story! By Jan Harold Brunvand. University of Illinois Press, Chicago, 2000. ISBN 0-252-02424-9. 218 pp., $22.95.

From snuff films to microwaved babies, alligators in sewers to AIDS-infected needles in telephone coin slots, urban legends are everywhere. With *The Truth Never Stands in the Way of a Good Story!*, folklorist and CSICOP Fellow Jan Harold Brunvand produces a new batch of funny and fascinating urban legends. Among the dozen or so tales:

• "The Brain Drain"

During the hot summer of 1995, a woman driving home from a trip to the grocery store heard a loud pop in the back of her car. Alarmed, she turned around, but didn't see what made the noise. She then touched the back of her head, and felt something soft and gooey in her hair. Though she felt no pain, she realized she'd been shot in the head and was terrified that it was her brains she was feeling. Panicked, she drove immediately to an emergency room. As paramedics treated the shaken woman, one rescuer noticed that a can of frozen biscuits had burst open in the heat; the dough had hit the woman in the head.

• "Lights Out!"

A story that circulated in 1993 and 1994 warned drivers not to flash their lights at cars whose lights were off. The reason, according to various sources (including a fictitious Sacramento police officer) was that doing so would trigger a horrible gang initiation in which the hapless victim would be followed to their destination and killed.

• "The Ghost Searching for Help"

A doctor is awakened one snowy night by a young girl in a worn coat who comes to his door pleading for help for her dying mother. The kindly physician

quickly dresses and follows the girl to a small house, where he finds a woman desperately ill with pneumonia. After administering aid, the doctor compliments the woman on her brave and resourceful daughter. The woman is puzzled, and tells him that her daughter died a month ago. She points to a coat hanging nearby—the same one the doctor saw— yet it is warm and dry.

• "Missing Day in Time"

This urban legend still actively circulates, mainly among fundamentalist Christians. The story goes that astronomical data entered into a NASA computer program "proved" that Biblical accounts of a miracle were correct, as the program finds a "missing day" alluded to in Joshua 10:8. Brunvand discusses the origin of this legend and traces it in part back to "an anti-Semite and crackpot" who taught military science at Yale from 1889 to 1892.

Urban legends are in many ways the folklore of the people, being spread informally through word of mouth as well as over the Internet. Wherever ordinary people gather, such as schoolyards, picnics, in coffee bars and around water coolers, urban legends will be exchanged. In addition to providing a fascinating glimpse into modern folklore, urban legends allow us to study beliefs. Why do people believe the stories they hear? What are the reasons people have for believing them?

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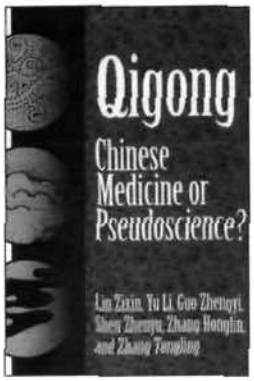
As one folklore investigator wrote to Brunvand, "I have, in general, stopped trying to enlighten people about folklore, but it's amazing how [investigating an urban legend] has affected my life, causing me to reject surface explanations and shallow thinking of all sorts. It doesn't make one very popular, I think, to understand folklore . . . . But, leaving aside popularity, I can think of few things that impart a healthy skepticism quite so enjoyably [as folklore study]."

Jan Brunvand is author of many books on urban legends, including *The Vanishing Hitchhiker* (1981), *The Choking Doberman* (1984), *The Mexican Pet* (1986), and *Curses! Broiled Again!* (1989). Prior to his recent retirement, he was a professor emeritus specializing in folklore at the University of Utah.

Drawing from years of experience and a sly wit, Brunvand discusses these urban legends, describes motifs, and catalogues story variations from around the world. He avoids berating those who pass urban legends along, and reserves his swipes for gullible journalists who don't check their facts and never let the truth stand in the way of a good story.



Will the Real *Qi* Please Stand Up?

DONALD MAINFORT

Qigong: Chinese Medicine or Pseudoscience? By Lin Zixin (Editor), Yu Li (Sima Nan), Guo Zhengyi, Shen Zhenyu, Zhang Honglin, Zhang Tongling. Prometheus Books, Amherst, New York, 2000. ISBN 1573922323. 149 pp. Hardcover, $25.

Across the globe, *qigong* (chi-gong) is many things to many people. The Chinese government has officially recorded over 3,000 different styles of what has become a form of religion for a nation craving some form of cultural, philosophical, and national identity. This book is significant because it is the first critical evaluation of *qigong* printed in English by Chinese scientists, who attempt to separate what they euphemistically call the "real" *qigong* from the sensationalism that has grown up around the ancient idea of *qi*.

The current popular view holds that Traditional Chinese Medicine (TCM) is a "natural" alternative to the "harmful side effects" of scientific medicine. Although the fusion of the two words *qi* and *gong* never appeared in print before the mid-1950s, the recently coined *qigong* term now appears prominently in TCM. After initially being attracted to *qigong* as a way of restoring health and well being, students may also be drawn toward promises that *qigong* can unleash latent psychic ability, claims that the authors firmly reject. Members of the China Association of Science and Technology (CAST) have investigated such claims for many years.

Originally published in China for Chinese readers, the book has just recently been made available in English. More work on the translation and some professional editing would be welcomed, however. For example, many misleading statements are made that suggest the authors really believe in *qigong* "energy." They remark about the wonderful cultural treasure that has benefited all of humanity. Some statements are even made to the effect that *qigong* has been proven scientifically!

The translator frequently neglects to indicate that a statement is a claim, not a fact and it isn't until sometimes several chapters later that we learn that the statements were only that: unsubstantiated and sometimes bogus claims. The authors gradually explain that the "experiments" were found to be seriously flawed and the resulting "proof" invalid. In the end, all that remains of what they describe as such an important contribution to the world boils down to nothing more than stretching, relaxation, and faith healing. This is what they vigilantly refer to as the "real" *qigong*. There may be political and cultural reasons for such diplomatic semantics.

Campaigns and regulations were imposed in China during the mid-1980s that discouraged the spread of rampant con-artistry, in which *qigong* masters were seriously bilking the public and in some cases dispensing poisonous medicine that led to a number of deaths. Now if you wish to register as a *qigong* organization, you must first file a petition with the Qigong Science Institute of China. They must then gain approval from the Chinese Science Association, which is under the jurisdiction of the Science Commission of the City of Beijing. This bureaucracy was intended to guard against "non-scientific" and "superstitious" groups, but the distinction seems to be based more on how well the advocates are able to bribe (establish "relationships" with) officials, rather than on any real scientific criteria. It is ironic that when CAST was formed, it had to do so as a branch of an official *qigong* organization. The only way for them to organize was as a team investigating what they call "false" *qigong*, with the implication that they are acting as guardians of the "genuine" *qigong*.

Just as former President Deng Xiaoping labeled his capitalist reforms "socialism with Chinese characteristics," so the authors must adhere to the "true *qigong*" oxymoron. Perhaps it would be just too shocking to officially declare that the emperor has no clothes. Meanwhile, Yu Li (known in China as Sima Nan) has for several

Donald Mainfort spent five years in China between 1992 and 1999, where he met and interviewed the authors of this book.

years offered a large cash prize to anyone who can demonstrate "real" *qigong* without cheating.

Examples of deception by some of the most popular *qigong* masters (referred to as *qigongists*) are examined, including Yan Xin, who now enjoys great popularity in the US. Yan became a TCM doctor in 1982, but two years later "his medical license was revoked due to his odd superstitious practices. Then Yan hunted for work elsewhere and became a quack doctor." Some of Yan's high-profile failures are documented, as are those of other "*qigong* gods."

The final chapter is a report by Beijing Medical University psychiatrist Zhang Tongling on the effects of *qigong*-induced psychosis (*zuohuo rumo*). Delusions, hallucinations, and psychosis can result when people (especially those who are highly susceptible to suggestion) become obsessed with practicing *qigong*, a condition frequently encouraged by their masters. She says that selecting an "improper method" and practicing it for too long can result in the symptoms that she has specialized in treating for over twenty years. But what is the "right" method, one might ask? Well, what it finally comes down to again is just simple, uncomplicated relaxation. But in China *rujing*, not *qigong*, is the term used to describe relaxation meditation aimed at clearing the mind and thinking of nothing. Though the authors point out the great difficulties involved in defining *qigong*, they state that *qigong* stresses intense concentration on complex imagery, supplied from books, audiotapes, or from the master. This is what they say separates *qigong* from other activities. Dr. Zhang's recommendations appear to be a polite way of saying that the only "correct" way to practice *qigong* is to choose some other activity (like *rujing* or *tai chi*) and call it a form of *qigong*.

Tennis anyone?

Profits of Doom: *Weekly World News* Goes Mainstream

ROBERT BAKER

The Coming Global Superstorm. By Art Bell and Whitley Strieber. Pocket Books (Simon & Schuster, Inc.) New York, 2000. ISBN 0-671-04190-8. 255 pp. Hardcover, $23.95.

There is only one possible explanation for the editors of Pocket Books accepting and publishing this sorry piece of pseudoscientific propaganda: Profit with a capital "P." Seeing the names Art Bell and Whitley Strieber must have brought visions of megabucks to the minds of the Simon and Schuster staff. After all, something like 3 to 5 million credulous thrill-seekers tuned in weeknights and on Sunday to have good old Art tickle their terror-bones. Moreover, didn't clever Whitley's *Communion* top the *New York Times* best seller list for over a year and rake in millions for his backers? Bell, Strieber, and the publishing sales force well know the dollars that well up from any and all scary prophecies of doom, death, and mass destruction. Moreover, their timing is perfect. No time could be better than the birth of the new millennium for cashing in on superstition and fear.

According to Bell and Strieber, Earth's climate is changing so drastically that unless we do something about it immediately, we will very soon experience a new ice age and a massive global superstorm. They tell us this spell of bad weather "will affect every living creature on the planet." In this true-life pseudoscience thriller, they examine evidence of mass extinctions throughout history to show us how cataclysmic events of the past hold a warning for our future survival. Jumping back and forth in time, they argue that the myths and monoliths of an earlier, unknown civilization that was wiped out during a period of similar climate change left a warning for us—a record that shows we are about to experience another one of these rare environmental disasters: a global superstorm.

And just what would this global superstorm look like? According to Bell and Strieber, the greenhouse effect and the trapping of more and more heat by surface air would cause the upper atmosphere to get colder and the resulting extreme difference in temperature would produce extremely violent weather. Next, the polar ice caps would melt and the oceans would become less salty and warmer and the sea levels would rise. Then the North Atlantic current would collapse resulting in many catastrophes:

- Blizzard conditions that develop suddenly at high latitudes and spread south.
- Massive snowfalls and sustained winds more than 100 miles per hour.
- Satellite communications will be disrupted and news blackouts will occur.
- General panic will occur as whole cities are trapped.
- The USA will lose 60 percent of its population.
- Europe will lose even more people and all life forms in Canada, Russia, Finland, Sweden, Norway, Iceland and Scotland will be wiped out.
- If the global superstorm happens in summer the melting ice will cause massive floods. If the global superstorm happens during winter the gigantic snowfalls will not melt and we will have a new ice age.
- Unprecedented death tolls and

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> mass destruction on an unfathomable scale will occur.

Bell and Strieber also assure us their gloom and doom is "based on years of research with top scientists and archaeologists. . . and it is science fact.[1] Earth's climate *is* changing and unless we do something about it we could be on the brink of a new ice age." But just what, pray tell, can us poor helpless and hapless humans do to forestall such massive climate fury? After 200 pages of horror and gut-wrenching worldwide tales of human misery and suffering, Bell and Strieber in a short but cheery chapter titled "Hope and The Human Future" inform us the global superstorms can be thwarted if we merely: 1) buy fuel-efficient cars; 2) subject sport utility vehicles to conventional emission standards; 3) insulate our water heaters; 4) have more "scientific breakthroughs," e.g., a better fuel cell and a fusion reactor that works; 5) make more use of solar cells and wind power; 6) ride more bicycles; 7) develop more and more intelligent robotic machines; and 8) improve science's ability to "predict future climate."

They apparently forgot that this last ukase pretty much does in their predictions of doomsday. If science can't do it now, what makes these two believe that they can do better than the scientists?

In a short review it is not possible to cite in detail all of the factual errors, logical contradictions, egregious exaggerations, and gross manipulations of common sense their account contains. Two short examples will provide you a clue. In Chapter 8, "The War Hypothesis," Bell and Strieber try to persuade us that "missiles, rockets, possibly even jet power and bombs are described in Vedic literature" and archaeologists digging in the ruins of Ur and Nineveh found fused silica, i.e., "sand that has been heated to such extreme temperatures that it has turned to glass . . . material that is also found at ground zero of atomic explosions." They would have us believe that the Vedic lords had nuclear weapons! The fused sand proves it!

In Chapter 18 "Does It Happen?" Bell and Strieber tell us that in ages past the onset of superstorms were so sudden that

> The sudden freezing that killed these animals required much more than a bad storm. It required a storm that was capable of delivering unprecedented levels of extreme cold to the surface and doing it so suddenly that the animals which were caught placidly grazing, did not even have time to look up. . . . To all appearances they were simply frozen solid where they stood without enough warning to do more than raise their heads. . . . The most famous of the frozen mammoths, the Berezovka mammoth . . . Discovered in 1901, the animal was intact except for its trunk and other areas that had been eaten by predators before the remains could be removed. The Berezovka mammoth is preserved just as it was found. It died in the middle of a sudden movement, raising its trunk as if surprised. (171–173)

A few perplexing questions immediately raise their ugly heads: Could such radical climactic extremes occur this quickly ever? Why did the predators eat only part of the rock-solid frozen meat? And, why didn't the predators also freeze? Finally, in one of their final chapters the authors candidly admit:

> Whether or not a new ice age will be the result depends largely on when the superstorm develops and how long it lasts. . . .We are, in fact, taking a great chance with a tremendous danger. So why don't scientists warn of the danger? Why don't they raise the alarm? *The two of us are amateurs. We don't think that we're wrong, but serious scientific work has to be done before we can be sure of our ideas* [italics mine]. . . .The problem is that scientists can't predict future weather, not with enough certainty to enact the kind of dramatic policy changes that are needed if we are right. So we're in trouble. Scientists might think that sudden climate shift is a danger. But unless they can provide us with a model that proves it, nothing will be done on a governmental level. . . . Because science can't produce certainty propagandists and politicians have effectively stopped any kind of official-level reform that might save our world. (216–217)

What splendid logic! Science can't predict future weather *but we amateurs can*! But in order to be sure of our ideas more science work is needed. Science must prove we're in danger but you will just have to take our word for it now. But science can't produce certainty but official policy should be changed nevertheless based on our belief that we're right and the superstorm is coming! What hogwash!

This is a *Weekly World News* cover story disguised as a scientific tome. It's hard to believe that these two boogeymen are serious in this sorry attempt to make money by frightening the half-informed and misinformed into reading this nonsense!

What one usually does when confronted by a truly bad book is ignore it. This piece of puerile propaganda, however, is so truly inept and so blatantly money-grubbing every intelligent reader should clearly understand the authors' and the publisher's reasons for putting this book on the market.

Some naive and unwary souls may see this work as the sincere efforts of two eco-environmental heroes to save the world. If you fall for this ploy, let me assure you that you have, once again, been conned and outwitted by two facile and manipulative masters of the art of making money from people's fears and forebodings. If you wish to be frightened or to find something truly terrible to worry about, tune in to Pat Robertson's TV show *The 700 Club* or subscribe to and read *Answers In Genesis* or *The Congressional Record.*

Note

1. Fortunately for those scientists and their work, they remain unnamed and unreferenced.

A Roller Coaster Ride Through Randomness

MARK DURM

Randomness. By Deborah J. Bennett. Harvard University Press, Cambridge, Massachusetts, 1998. ISBN 0-674-10745-4. 238 pp. Hardback, $22.95.

Considering the misconceptions, inconsistencies, paradoxes, and counterintuitive aspects of probability, it should be no surprise that, as a civilization, we took a long time to develop correct intuitions. Indeed, every day we can see evidence that the human species does not yet have a very highly developed probabilistic sense.

—Deborah J. Bennett

Indeed, humans do not have a very highly developed sense of probability, as noted by Deborah Bennett above. Bennett's fascinating book can inform, educate, and entertain, whether that reader be a layperson or a professional mathematician.

In chapters titled, "Chance Encounters," "When the Gods Played Dice," "Mind Games for Gamblers," "Order in Apparent Chaos," and "Paradoxes in Probability," among others, Bennett takes the reader on a roller coaster ride through the highs and lows of chance and randomness.

To begin, she gives an excellent historical account of gaming. She quotes one of the Vedic poems of the *Rgveda Samhita*, written in Sanskrit approximately 1000 B.C. The poem, "Lament of the Gambler," is a monologue in which the gambler admits his obsession has destroyed his happy household and driven away his devoted wife. He blames his addiction on the magic of the dice. These "dice," Bennett writes, are from the earliest days of civilization because people "invented simple mechanisms for the purpose of removing human will, skill, and intelligence from their play and from serious decision making." The ancients believed that the outcomes of situations and events were controlled, in the end, by a deity, not chance. Adds Bennett: "The use of chance mechanisms to solicit divine direction is called divination, and the steps taken to ensure randomness were intended merely to eliminate the possibility of human interference, so that the will of the deity could be discerned." For example, Homer writes in the *Iliad* (approximately 850 B.C.) that a lottery was used to choose the person who will cast the first spear in a duel between Menelaus and Paris. The gods thus have absolute power to manipulate and control events.

Biblical references to a "lottery" revealing God's will can be found in Proverbs 16:33 and 18:18, Leviticus, Esther, I Samuel, I Chronicles, Judges, Nehemiah, and Jonah among others.

In the chapter titled "Figuring the Odds," Bennett explains the basic terms of probability theory, such as *simple events*, *compounded events*, *set*, and *sequence*. Many people confuse *set* and *sequence*, and thus, she says, make improbable probability assumptions. She adds, "In the evolution of the theory of probability, the inability to recognize the sequential nature of random outcomes has been a major stumbling block, and it continues to plague learners even today." How does Bennett approach the sequence aspect of probability? Socks! Yes, socks, two blues and one red that are drawn from a drawer. Bennett's genius is in the simplicity of her solutions. She reveals in this chapter that learned men did not know for centuries that there were 216 possible outcomes, instead of fifty-six, for three-dice games. Why? They failed to recognize the difference between a *set* and a *sequence*. They counted sets when they should have been counting sequences.

In the chapter "Mind Games for Gamblers" she discusses the woman who won the New Jersey lottery twice within four months—a feat originally reported as a one-in-seventeen trillion long shot. Not so. The odds were just one in thirty that this would happen to *someone somewhere* in the United States. Bennett quotes two other statisticians, "With a large enough sample, any outrageous thing is likely to happen."

Bennett weaves into her book the background and origins of *the bell curve*, *significance*, *correlation coefficient* (A.D. Darbishire in 1907 used the term *correlation coefficient* as the number that measured the degree of connectedness between the first and second dice throws), *student's t*, and other terms used in statistical probability.

She repeatedly emphasizes, in different ways using different examples, that randomness is the heart of understanding probability. She warns us that randomness in everyday events may be hard to understand, but she quotes John Venn's philosophy (after whom the Venn diagram is named) that people should be "taking cognizance of laws of things and not of the laws of our own minds in thinking about things."

In the final chapter, "Paradoxes in Probability," she explains the counterintuitive nature of paradoxes. For example, she explains in her easy manner the correct answer to a classic probability paradox: Given that a family has two children and at least one is a girl, what is the probability that the family has two girls? The answer is one-third, not one-half. She also gives one of the best explanations ever written for the infamous Monty Hall problem which Marilyn vos Savant presented in her "Ask Marilyn" column in *Parade* magazine. (When the SKEPTICAL INQUIRER reported [Summer 1991] on the initial criticisms that vos Savant received for what many *Parade*

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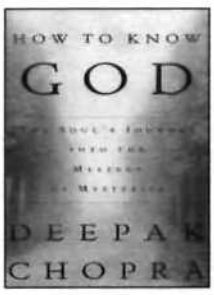
readers incorrectly assumed to be a wrong answer, SI readers also responded, pro and con, in droves [Winter 1992]. This helped stimulate a subsequent *New York Times* front-page article.) Bennett quotes from the *Times* article that the problem and vos Savant's solution were "debated in the halls of the Central Intelligence Agency and the barracks of fighter pilots in the Persian Gulf" and "analyzed by mathematicians at the Massachusetts Institute of Technology and computer programmers at Los Alamos National Laboratory in New Mexico." Bennett's solution is very understandable.

Bennett is to be lauded for her efforts. She has done much to remove the misconceptions, inconsistencies, paradoxes, and counterintuitive aspects of probability. She has applied her wit and intelligence to help us develop a better sense of probability and randomness.



Are We One With God?

RUDOLPH MUSKA

How to Know God. By Deepak Chopra. Random House, New York, 2000. ISBN 0-609-60078-8. 305 pp. Hardcover, $24.

The early church father Origen (circa 200 A.D.) once observed that it is better to have knowledge than belief. Here comes Deepak Chopra, hailed by some as another spiritual master, who does Origen one better. In effect Chopra says, "Hey, you don't need to have belief in God when you can have direct experience of the Divine. Not only that, but all mankind is made (the brain is 'hardwired') to unite with God."

In this audacious volume Chopra purports to educe spirit from science. Other than that he falls in the genre of Eastern philosophy with its "Veil of Maya" concept (the world is only an illusion), the law of Karma, the melding of opposites, and the soul's eventual fulfillment in the All.

This is a stimulating and enjoyable book. Chopra draws from a plethora of sources—neuroscience, quantum physics, psychology, social science, philosophy, literature, and both Eastern and Western sacred writings. The book is replete with stories, historical references, myths, and an abundance of anecdotes, which Chopra uses to illustrate, confirm, and, as he sometimes intimates, prove certain ideas he wants to proffer. His material is laced with references from the Old and New Testaments. Not only is Chopra obviously erudite but he manages to write in a reader-friendly style much of the time.

On the one hand his wide-ranging content is bound to impress those uninitiated in philosophy, religion, and science. On the other hand, the less-informed reader may well get bogged down in the heavier and unfamiliar stuff, such as the "quantum zone" where the intangible is in touch with the tangible, or "virtual reality" where there is neither space nor time nor energy. Chopra also discusses the timeless point of nothing, which is the source of everything that is. How well will the modern mind, steeped in the world view of the West, assimilate a religious philosophy which repudiates the world we experience, denies the idea that the soul is personal, and refutes the conception of God as a Thou?

Well, let us look at the main argument of the book. It is in the lengthy third chapter where he elaborates on the "Seven stages of the process of God." According to Chopra, man in his struggle to make sense of this complex and chaotic world responds to it by conceiving God in various ways, at seven "levels." At the first level, God is pictured as a strict father, protector, and punisher. But as man matures spiritually (pursues his quest of the divine) God is conceived in higher ways—as a provider of laws, a source of peace and creativeness, and finally as sacred—the source of everything. Commensurate in this scheme of things are man's biological responses, his conceptions of God, and his eventual enlightenment, which is to say, his experience of the divine. As Chopra likes to put it, it is not belief in God that leads to knowledge of Him (or It) but the experience of God that is available to whomever makes the effort.

Of concern to me are two items, both of which reflect Vedic thought but are gravely disappointing to the Western mind and, naturally, to most who read this book.

The first is the nature and reality of good and evil. Through the "seven stages of God," Chopra outlines man's evolving apprehension and understanding of good and evil. Initially, good is defined as safety, comfort, food, and the like, while evil is considered to be physical threat and abandonment. However, as the journey from ignorance to knowledge progresses, good changes and evolves into clarity and inner calm, seeing the truth, a higher consciousness, a cosmic force, until finally it emerges as the union of all opposites.

Likewise through this evolving process evil disappears altogether. It no longer has a role in the drama of life and death. (Mythically, even Satan has a place in heaven.) Be this as it may seem to those steeped in Indian thought, the ostensibly bad things of this world (starvation, sickness, war, catastrophes) are stark and very real to those who actually experience them, and by saying to those who suffer that evil is an illusion is plainly pointless, unbelievable, and cruel. It is more than a little ironic to

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imagine a person suffering from the worst forms of disease, famine, and dysteleological degradation to say, "In this world of suffering and woe, it's nice to 'know' that everything is all right, everything has a divine purpose."

The second matter pertains to "knowledge." No one doubts that there are many occasions of knowing that are not empirically verifiable. We "know" all kinds of things, such as that it's not good to harm innocent children, and so on. But the issue here has to do with alleged knowledge of God. When a person spies this book's attractive dust cover and titillating title, one is inclined to think that Chopra has either the secret or some unique insight into this age-old pursuit. In the thought of Judaism, Christianity, or Islam, one thinks of God as some sort of great being, the source of all things.

But then the reader discovers that a book promising a way to find and "know God" is reduced to a kind of monistic simplicity. There is no transcendent being *vis-á-vis* man. There are no dualisms at all—not even between God and man—there are only apparent differences between subject and object, knower and known, Creator and creation, physical and spiritual. All are One. And since this One is God, ultimate reality, everything that is, the conclusion follows: *God is found and known because we* are *God.* This is the end of the journey from ignorance of the true nature of things to the realization that we are one with God. This is *How to Know God.*

By the accolades on the dust cover and complimentary endorsements in the opening pages of the book, one knows that Chopra's writing has found a wide audience. It might be safe to assume that much of the enthusiasm for mystical Eastern philosophy is due to a certain amount of disaffection with organized religion, with its dogmas and rituals. Possibly. However, many a seeker today is ambivalent in his or her search for meaning in life, looking more for inspiration, poeticism, and teddy bear warmth in place of the rigor of hard and clear thinking in matters religious and philosophical.

The End of History?

MARK BAUERLEIN

The Killing of History: How Literary Critics and Social Theorists Are Murdering Our Past. By Keith Windschuttle. Encounter Books, San Francisco, 2000. ISBN 1-893-554120. 298 pages. Softcover, $15.95.

Here are four theses about history:

> The purpose of writing and researching history . . . is not to gain knowledge about the past but to satisfy the needs of the present. (78)
>
> "[H]istory is something we make rather than something we learn." (cited on 77)
>
> What is "true" . . . depends on who is speaking to whom and in what context. (7)
>
> The belief that there are "facts" about history . . . is merely . . . one ideological position among several. (16)

To inquirers who believe that historical study involves the gathering of materials and determination of facts, these assertions are outrageous. But in fact, says Keith Windschuttle, they are fast becoming the received wisdom of academic scholarship. In humanities departments across the Anglo-American world, the terms "truth," "fact," "observation," and "evidence" are mouthed with a smug *dismissiveness, clothed with scarequotes,* aligned with a host of sins ranging from egotism to genocide. Truth is nothing but a claim, a compliment interested people pay to their own perspectives. A fact is a construct, the conversion of an interpretation into a given. And they are far from harmless. These scientific notions form the intellectual backbone of imperialist ventures and racist beliefs, the argument runs, the abstract stuff of power and oppression. To take Windschuttle's first example: certain of the truth of his Eurocentric vision, never questioning the validity of his observations, Cortés entered Mexico and destroyed an ancient civilization. And for 450 years, citing facts and presuming universal values, historians retold the story the story as the triumph of Christianity over paganism, Enlightenment over savagery, white skin over color.

Contemporary historians pride themselves on being less credulous, less culturally arrogant. As Windschuttle puts it, they have made an epistemological discovery: the other. They have become sensitive to difference, open to estrangement. What was previously experienced as natural, normal, universal—white skin, Judeo-Christian belief, masculinity, Europe, heterosexuality—is now regarded as but one acculturation intrinsically no better than any other.

Many scientists would agree with that multiculturalist adjustment, but for cutting-edge history professors an "otherly" tolerance extends past identity and politics and into issues of truth and method. "Otherness" to them is an epistemological advent, lying beyond not only borders of skin color, language, religion, etc., but of cognition itself. When Cortés and his men confront the Aztecs, they see people of strange appearance and custom. They fail to understand that their way of seeing is not *the* way of seeing, that the Spanish angle of vision misconstrues the meaning and value of Aztec life. This is a breach of culture and cognition that prevents adjudication of the beliefs of each side. Cortés's judgments are correct only relative to his Eurocentric realm, and his imposition of an imperialist perspective is a form of violence paralleling the physical violence he commits. The same

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goes for historians who share the Eurocentric outlook. This is the reasoning, Windschuttle observes, taking control of history departments.

Empirical study demands that evidence be dissociated from the conditions of its discovery, that the identity of the discoverer play no role in the validity of the evidence. "Otherness-thinking" maintains the opposite: evidence is always conditioned by the persons wielding it, by their values, politics, interests. An eighteenth-century Spanish monk's history of the conquest is just that—a narration tied to the politics, ethnicity, and gender of its originator. The same goes for a sixteenth-century Aztec refugee's memoir, a Spanish soldier's, an American academic's, etc. Instead of being a discipline in which different versions of an event are judged for their historiography and weighed against known facts so that a synthesis might follow that winnows the truth from each one, in otherness thinking history becomes a competition of rival stories, each preserved intact, favored not for their truth but for their representation of an identity.

According to Windschuttle, to remain scientific, history does three things: "first, it aims to record the truth about what happened in the past; second, it aims to build a body of knowledge about the past; third, it aims to study the past through a disciplined methodology. . . ." (202)

Of course, history is not as scientific as the natural sciences. The research conditions are not as controlled, the data are not as clean, the inquirers are not as closely monitored, and it retains a narrative component. But history still works with documentary evidence and must be submitted for peer review. Recent historians, however, forsake all three scientific aims. To record the truth, they declare, is to pretend that a partial interpretation is a pure rendition of things. To build a body of knowledge is to judge, organize, and administer interpretations, which is to draw boundaries and make exclusions. To sustain a disciplined methodology is to rule out innovative, "otherly" methods and subject matters. New historians justify these principles with a simple reminder: the history of historical writing shows that historians have served as apologists for tyranny, lackeys for rulers, mandarins hiding their allegiances behind a spurious idiom of objectivity.

But for Windschuttle, the fact that historians have functioned as sophisticated spin doctors does not invalidate history or subvert its objectivity. Instead, their partisanship only rebukes those functionaries as bad historians. New historians are right to point out that historians have often been coerced by political pressures, swayed by racial and sexual biases, and indoctrinated into social attitudes. But rather than concluding that all historical writing is political, biased, and doctrinal, new historians should have criticized their forebears for failing empirical protocols of research. Because new historians believe that all history is tendentious, they have no objective standard by which to measure bad history.

The irony is that while new historians chastise the old historians for their politics and their pretense (to objectivity), in insisting on the political nature of historical study, new historians must include themselves in the indictment. They claim to be morally better than the old guard in their progressive multicultural politics, but their only historiographical improvement upon the old history lies in their avoidance of pretense. They are certainly not superior in their archival research or their handling of evidence. This is perhaps the most important point in Windschuttle's analysis and the reason for his melodramatic subtitle. In asserting that "there are no objective facts to "discover," no history to be "learned" (quoted on p. 89), new historians remove disciplinary constraints from inquiry, encourage scholars to play fast and loose with documentary evidence, and deny peer review methodological criteria. Books such as Tzvetan Todorov's *The Conquest of America: The Question of the Other* and Paul Carter's *The Road to Botany Bay: An Essay in Spatial History* received international acclaim and won scholarly prizes. Academic stars lavished praise on the books, and professors added them to reading lists. And yet, Windschuttle demonstrates, despite their esoteric vocabulary of otherness, and their fulsome citation of theory, they get their facts wrong. Detailing Aztec culture, Todorov mentions the practice of human sacrifice and cannibalism, but then downplays it by comparing it to the Eucharist. He skirts the gruesome eviscerations of Aztec ritual and the enormous number of killings during a single "season" (at times, over 20,000 in four days—pp. 62–70). In recounting the growth of Botany Bay, Carter laments the silencing of convicts by the authorities of the time and by later historians. But, Windschuttle counters, the Australian convicts "produced more documents recording, in their own words, their observations and activities, their dreams, hates and loves, than almost any other underclass in history" (122).

Despite these glaring errors, the books have prospered—the sign of a discipline in trouble. Once historical treatises are no longer judged by empirical standards, all one is left with is fashion, personalities, and politics. We have always had the latter, of course, but as long as the empirical standards remained in place, history could call itself a respectable field of inquiry and claim to tell the truth. Verification, fact-checking, archival digging, and peer review on empirical grounds kept researchers honest, forcing them to slog through a mass of historical material with judiciousness. New historians have concocted a flashier, easier way, and dressed it up with a morality of otherness-awareness, such that "the prospects of a new, younger generation being attracted to empirical history dwindle all the time" (130). Grant-giving agencies, hiring committees, and academic press editors have followed suit. It remains to be seen whether the rear-guard advocates of objectivity can stay this decline, or whether history is to follow the tracks of postmodernism into yet one more self-defeating discipline. □

NEW BOOKS

Listing does not preclude future review.

Denying History: Who Says the Holocaust Never Happened and Why Do They Say It? Michael Shermer and Alex Grobman. University of California Press, Berkeley and Los Angeles, 2000. ISBN 0-520-21612-1. 312 pp. Hardcover. $27.50. A social scientist and a historian probe into the difference between history and pseudohistory by using Holocaust denial as a classic case study in how the past may be revised for political and ideological purposes. They refute the Holocaust deniers' claims and arguments, present an in-depth analysis of their personalities and motives, and show, with solid evidence, how we know the Holocaust happened. They use the case study to consider how we know any past event happened.

Embracing the Power of Humanism. Paul Kurtz. Rowman & Littlefield Publishers, Inc., 4720 Boston Way, Lanham, Maryland 20706. 2000. ISBN 0-8476-9966-8. 227 pp. Hardcover. $24.95. How can the free, autonomous, self-reliant, and rational person find life meaningful, exciting, and vibrant, and yet learn to harmonize one's dreams and values with others in moral communities? How can the free person become the responsible person, aware of the needs, interests, suffering, pain, and demands of others? This model of the good life is the theme of this compilation of excerpts from Paul Kurtz's various writings on normative ethics. He provides his own example of the Promethean spirit: "audacious, self-affirming, accepting of one's own freedom, and willing to take risks to attain one's goals, yet finding life full of significance and richness and being deeply concerned with the common moral decencies and the pagan virtues of nobility and excellence."

The Sky is Not the Limit: Adventures of an Urban Astrophysicist. Neil de Grasse Tyson. Doubleday, 1540 Broadway, New York, NY 10036. 2000. ISBN 0-385-48838-6. 191 pp. Hardcover. $23.95. A congenial and eye-opening book by a Princeton astrophysicist and director of the Hayden Planetarium in New York City. Tyson writes about science and its methods (including skepticism) with ease and enthusiasm. He interweaves his scientific adventures with descriptions of his own personal quest to become an astrophysicist, his goal from the age of nine. The stereotypes and assumptions he had to counter as a black person with that goal make up one of the most poignant portions of the book, which throughout reveals his deft ability to humanize and popularize science. A concluding chapter on "God and the Astronomers" cuts through much of the nonsense in attempts to commingle science and religion. He declares he has "no need of that hypothesis" because, as he says, science has "a 'greatest story ever told' of its own." He briefly relates that story from the beginnings of the universe to its end.

Therapeutic Touch. Edited by Bela Scheiber and Carla Selby. Prometheus Books, 59 John Glenn Drive, Amherst, NY 14228-2197. 2000. ISBN 1-57392-804-6. 360 pp. Hardcover. $26. The first book-length rational, critical evaluation of therapeutic touch, the waving-hands-above-the-body therapy fad taught in many nursing schools. This anthology of research articles covers every aspect of the subject, including the physics of the claimed "human energy field" that is an essential component of the "theory" underlying TT, detailed discussions of the recent research into the efficacy of TT, an account of the origins and history of the practice, a review of skeptics' work to examine it critically, a discussion of media handling of the topic, and a consideration of the ethical implications of the practice.

—Kendrick Frazier

ARTICLES OF NOTE

Holton, Gerald. "The Rise of Postmodernisms and the 'End of Science.'" *Journal of the History of Ideas*, July 2000, pp. 327–41. Holton uses Susan Haack's idea and says that we have in many ways entered into an "Age of Preposterism." Beginning with the seventeenth century Romantics and ending with the Natural Philosophers and the National Socialist Movement, Holton looks at the "war on science's" historical lineage. He concludes that as long as people believe that the Golden Age was replaced by modern science, there will forever be a longing by some for a "conscious determination to bring about a newly spiritualized future."

Mayr, Ernst. "Darwin's Influence on Modern Thought." *Scientific American*, July 2000, pp. 79–83. Mayr, a great historian of evolutionary biology, deems Darwin the most influential figure on modern thought. He considers Darwin's greatest contribution his development of "a set of new principles that influence the thinking of every person." Mayr says that almost every aspect of modern man's belief system is somehow affected by Darwinian principles. Darwin made major contributions in three fields: evolutionary biology, the philosophy of science, and the modern zeitgeist.

Makgoba, M.W. "HIV/AIDS: The Peril of Pseudoscience." *Science* 288:1171, May 19, 2000. Strong editorial by the president of the Medical Research Council of South Africa calls urgent attention to a tragic new example of the harm pseudoscience can cause. The president of South Africa, which is undergoing an epidemic of AIDS, has embraced the view that AIDS is not caused by the HIV virus. Says Makgoba: "The politically motivated suggestion, in the absence of scientific evidence, that malnutrition and poverty cause AIDS in Africa is not only absurd but may also represent a form of national denial. South Africa is rapidly becoming a fertile ground for the types of pseudoscience often embraced by politicians. . . . The government is retreating behind revisionist theories. There is little doubt that HIV causes AIDS, as has been demonstrated by many carefully conducted experiments and clinical case studies. In contrast, there is no evidence that common African conditions such as poverty, malnutrition, and many chronic infectious diseases by themselves [cause AIDS]. . . . To conflate causation with cofactors through a mixture of pseudoscientific statements is scientifically and politically dangerous in societies where denial, chauvinism, fear, and ignorance are rampant. . . .The undermining of scientists and the scientific method is especially dangerous in a developing country still in the process of establishing a strong scientific research base." (See also "African scientists join colleagues in affirming HIV's role in AIDS . . ." [*Nature* 406:3, July 6, 2000] and "The Durban Declaration" [*Nature* 406: 15–16, July 6, 2000]. The latter is a clear statement that HIV causes AIDS. It is signed by more than 5,000 people, including Nobel laureates, directors of leading research institutions, scientific academies, and medical societies, and thousands of individual scientists and doctors.)

Sloan, Richard P., et al. "Should Physicians Prescribe Religious Activities?" *New England Journal of Medicine*, 342(25): 1913–1916, June 22, 2000. Increased interest among both the general public and the medical community regarding the connection between religion and health concerns the authors, who are chaplains from New York hospitals and biomedical researchers from Columbia University. They are troubled that "broad generalizations are being made on the basis of limited, narrowly focused, and methodologically flawed studies of the place of religion in medical practice." Three stated justifications for prescribing religious activities were examined and no solid evidence was found. The authors conclude by urging skepticism regarding the connection between religion and health. Religion can stand on its own, and combining it with medicine only demeans and trivializes it. "Religion does not need science to justify its existence or appeal. Religion and science, and religion and medicine, exist in different domains and are qualitatively different."

Thomas, Dave. "What Really Fell from the Roswell Sky." *Albuquerque Tribune*, July 8, 2000, pp. C1-2. (Available on the Web at www.nmsr.org.) Invited "Insight and Opinion" article of several thousand words published on the fifty-third anniversary of the first news reports that a flying saucer had been recovered outside of Roswell, New Mexico, patiently and authoritatively explains what really happened to foment the reports. After recounting the Roswell myth as it is usually told in books, articles, TV shows, and movies, Thomas, a physicist and president of New Mexicans for Science and Reason, writes, "Something fell from the sky and landed near Roswell in the summer of 1947. But it didn't come from outer space. It came from . . . *Alamogordo!*" He then describes the top-secret, balloon-borne physics experiments then being designed to detect Soviet nuclear tests from halfway around the world (Project Mogul) and the 1947 New York University summer field research project at Alamogordo, New Mexico, to develop constant-level balloons that was an unclassified part of that. The balloons were launched by graduate students including now-retired New Mexico Tech professor emeritus atmospheric physicist Charles B. Moore. Moore's own detailed recollections have clearly shown that a lost assemblage of balloons and instruments launched in central New Mexico June 4, 1947, was the source of the debris recovered and reported a month later as the possible remains of a "flying saucer." This scientific explanation has been described before in the past six years in two Air Force reports, articles in the SKEPTICAL INQUIRER, at least five skeptical books, and even the UFO literature, but it would now seem that the mainstream news media have begun to accept it as well as the most credible explanation of an event that was once given almost universally sensational treatment.

—Jodi Chapman and Kendrick Frazier

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Smith, John, Jane Jones, and J.T. Thompson. 2001. A skeptical article. *The Journal* 5 (1): 7–12.

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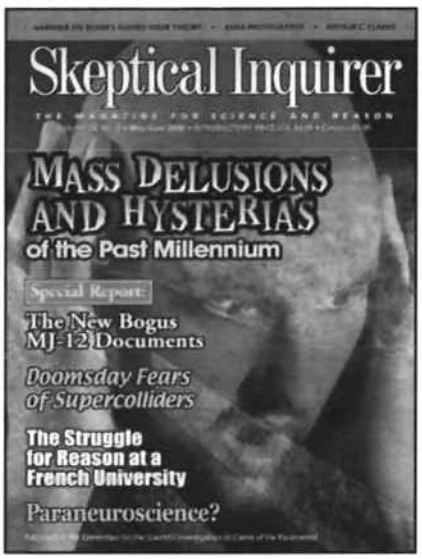
Millennium's Mass Delusions


Skeptical Inquirer
THE MAGAZINE FOR SCIENCE AND REASON
MASS DELUSIONS AND HYSTERIAS of the Past Millennium
Special Report:
The New Bogus MJ-12 Documents
Doomsday Fears of Supercolliders
The Struggle for Reason at a French University
Paraneuroscience?

I really enjoyed the May/June 2000 issue of SKEPTICAL INQUIRER! The article "Mass Delusions and Hysterias" was quite informative, and I enjoyed the way the authors outlined the history of mass hysteria from the Middle Ages France to Salem, Massachusetts, 1691–1693. Sometimes I shake my head in disbelief at certain doomsday predictions, from our own Y2K fears to the May 5 alignment of the planets. I had one guy at work who was sure that either Earth was going to tilt on its axis or we would wind up spinning off into space from the gravitational pull of all the planets that would be aligned during this day. The only thing of interest that happened on May 5th is seeing it rain on a bunch of partygoers at a Cinco de Mayo parade. For shame.

Paul Dale Roberts
Department of Community Services and Development
Elk Grove, California

Robert Bartholomew and Erich Goode describe their article as "a survey of the more colorful cases," yet the '80s and '90s psychobabble era was excluded.

In what other example of mass delusion could the following bizarre circumstances, illogical premises, and unscientific, belief-driven conclusions be found, to the same extent and significance as in the '80s and '90s?:

• *The Trauma School of Simplistic Solutions*: A new mental health industry-offshoot, the illegitimate child of clinical psychology, came into existence in the '80s. Based on the theory of recovery of repressed memories, largely untrained therapists supposedly facilitated their patients' healing by plumbing the depths of their psyche, using hypnosis, sodium amytal, guided imagery, automatic writing, and, most recently, EMDR (eye movement desensitization and reprogramming). Anyone could do it, conjure up a trauma, then find the trauma's cause, and did, from weekend-certified hypnotherapists to church-sponsored pastoral counselors to any entrepreneur who wanted to hang out a shingle and call himself a "psychotherapist in private practice." The trauma: childhood sexual abuse.

• *The "You Must Get Worse Before You Get Better"* set of theories became the foundation for what is known as regression therapy, a field driven by the belief that symptoms have their root cause, always in childhood sexual abuse and, when "memories" are recovered and healing does not occur, it is certain more memories are to be unearthed. Healing does not come easy, only after years of intensive, expensive psychotherapy and often many hospitalizations (per the allowed guidelines of the insurance carrier, not the needs of the patient).

• *The Hollywood School of Mental Health*, in which movies and books, purported to be true, formed the bases for a brand-new genre of mental health conundra, such as *Sybil* and *Three Faces of Eve* becoming the textbook for Multiple Personality Disorder and its cause, childhood sexual abuse, and *Rosemary's Baby* and *The Exorcist* forming the criteria for the Satanic Ritual Abuse diagnosis. . . .

• *The Blame-It-on-the-Patient School of Therapy* in which the therapist is never at fault, since the patient must always come up with the memories in order to heal herself, not doing so meaning the patient is in denial or not trying hard enough at the "memory work."

• *The Symptoms Prove You Were Sexually Abused and the Fact You Do Not Remember Is Proof that It Happened*, the finest example of circular reasoning in the history of the psychotherapy industry since Freud first spun his spell upon an unsuspecting public.

Thousands of families have been destroyed by their ridiculous and farcical excuse for a mental health healing program. Most of the patients stuck in this quagmire are intelligent and creative women who ended up with the wrong therapist and now believe they are victims/survivors, to be forever supported by the all-knowing and all-powerful therapist and therapy group. Until the money runs out, that is. . . .

Francis X. Kane
Acton, Massachusetts

How did these authors overlook the witch trials of 300 years ago, the manufactured memories of the 1990s (and still going on) by the majority of psychotherapists—and profiting vastly the "justice" system. Read about the Wenatchee Witch Hunts—thousands were severely damaged, but the "therapy" and "justice" systems are still stonewalling.

William Alley
Edmonds, Washington

Bartholomew and Goode perpetuate one myth in the process of debunking another. On page 26 in the section on "The Hispanic Goatsucker, 1975 to Present," they unskeptically define a goatsucker as "a crepuscular bird that steals goat's milk."

Today the term "goatsucker" (from the Latin word *caprimulgus* or "goat-milker") refers to all members of the worldwide family Caprimulgidae, which includes such familiar North American species as the whip-poor-will and two species of nighthawk. These birds do not suck goats and never have. The ancient Greeks believed they did, and Aristotle accepted this old herders' tale when he wrote, "Flying to the udders of she-goats, it sucks them and thus gets its name. They say that the udder withers when it has sucked at it, and that the goat goes blind." This is, of course, sheer foolishness, but the name has stuck. "Goatsuckers" feed mainly on flying insects.

Sylvia R. Gallagher
Huntington Beach, California

Robert Bartholomew responds:

Contemporary witch-hunts and moral panics involving manufactured memories of sex abuse fueled by some amateur and mental health professionals and religious movements are certainly worthy of making our highlight list. But so are current unfounded claims over silicone breast implant safety, Melanesian "cargo cults," the continental European witch trials, the 1917 Fatima "miracle," the Nazi myth of Aryan superiority—all of which didn't make the list. Lists are social constructions of their authors. As we noted in our article, we limited ourselves to a few of the more colorful cases. Why? There are simply too many worthy mass delusions and hysterias—and so little space.

As for the term goatsucker, *perhaps we should have said "named after a bird of the Caprimulgidae family that* purportedly *steals goat's milk."*

Paraneuroscience Candidates?

Kyle Kirkland's interesting article, "Paraneuroscience" (May/June 2000), claims that neuroscience has not yet attracted any parascience or fringe science. Not quite true. Phrenology, which he lists as a fringe area of anatomy, was really about brain structure, and therefore neuroscience. More contemporaneously, consider the claim that we use only 10% of our brains, or the unreplicable claim that listening to Mozart's music will organize neurons and synapses and therefore improve intelligence. I admit isolated claims aren't the same as fully developed parasciences. How about the left brain/right brain enthusiasts, who claim they can help people integrate their "logical" and "creative" selves by exercising the dormant right half of the brain? I'll nominate that field as a paraneuroscience.

James W. Kalat
Professor of Psychology
North Carolina State University
Raleigh, North Carolina

In response to Kyle Kirkland's article, I do know of one area that could be called paraneuroscience, which is the claim that microtubules in neurons have special quantum mechanical properties. These properties are invoked to support various supposed parapsychological or metaphysical phenomena, such as a privileged role for conscious observers in quantum mechanics. They are also put forward as the site of connection between the mind and the brain, and as elements of quantum computers.

Ken Olum
Sharon, Massachusetts

Kyle Kirkland responds:

There is indeed a number of interesting and sufficiently uninformed theories about the brain that could collectively form a "paraneuroscience." Please note, however, that such theories generally aren't taken seriously by neuroscientists. Professor Kalat's argument that phrenology is more about neuroscience than anatomy is valid, but please note that Franz Joseph Gall, phrenology's founder, was an anatomist. Neuroscience, identified as a separate discipline, is quite young, which of course was one of the points I made in the article. Give us time—I'm sure we'll develop a fringe sooner or later. Why should other scientists have a paradiscipline, and neuroscientists have none?

Bohm's Guided Wave Theory

In his spirited endorsement of the Broglie/Bohm Guided Wave Theory (May/June 2000), Martin Gardner employs rhetorical techniques more often associated with defenders of pseudoscience. He cites famous scientists who reject GWT as positive evidence, imputing that they formed their opinions for emotional rather than rational reasons. He also compares his preferred interpretation not to modern quantum mechanics, but to obsolete formulations in which consciousness played a role.

The proper framework for this debate is Occam's Razor, and GWT fairs poorly on that scale. GWT has no wave function as such and thus eliminates the "paradox" of its collapse, but the cost of this apparent simplification is to throw away the most elegant aspects of Quantum Mechanics (QM). Heisenberg Uncertainty is a natural consequence of the wave function, since a wave squeezed in frequency is forced to spread in position and vice-versa. A particle in GWT, with its exact position and momentum, would need to have uncertainty imposed on it by the guide wave somehow. "Tunneling" is also not a natural property of a GWT particle since it would need to fly through the barrier, possibly faster than light! Indeed, GWT has its own mystery, as imponderable as decoherence, about how a potential field can affect the attributes of a particle without altering its energy. Worst of all, GWT requires two basic entities where QM gets by with only one.

For this added complexity GWT offers only comfort—it tells a happier story than standard QM. While QM may be "spooky," GWT is decidedly spiritual. Bifurcating the particle into a brute corpuscle animated by an ineffable, holistic field, Broglie's theory recapitulates one of mankind's oldest metaphysical beliefs. While dualism may be attractive to some—and there is a long line of distinguished scientists and scholars who have sought the mind of god or man in the deep structure of physics—nature is under no obligation to fit our preconceptions. It is far better to find the simplest theory that fits the facts and adjust our own intuitions appropriately.

Stuart Ferguson
Sunnyvale, California

Martin Gardner argues that David Bohm's "guided wave theory (GWT)," an alternative to Quantum Mechanics, deserves to be better known. He strongly implies that irrational response is the order of the day, and misquotes Feynman to strengthen his case.

One must carefully distinguish between having competing theories (which can be experimentally distinguished) and having competing interpretations (which can't). Bohm's guided wave interpretation makes the same predictions as conventional QM, so it is not a competing theory. His deterministic guiding wave is unobservable, as Gardner points out. That's why most physicists don't think much about it, or any of the other interpretations. Unless one's intellectual constructs have observable consequences they are only stories. (For a similar discussion about the theory of evolution, see Henry Gee's book *In Search of Deep Time.*)

Gardner's article doesn't make it clear that despite the unappealing feature of QM (unavoidable randomness), the alternatives suffer from equally unappealing features. J.S. Bell's famous theorem (see *Rev. Mod. Phys.*, v38, p447 [1966]), proved that any deterministic theory that exactly reproduces the quantum mechanical predictions is necessarily contextual (e.g., requiring faster-than-light communication). If Bohm's guiding wave could be observed, it would exhibit this kind of behavior.

The successful construction of new theory requires the guidance of data. As long the predictions of quantum mechanics are verified, every viable alternative will merely be an interpretation, and won't be taken very seriously. If QM makes an incorrect prediction, then alternative theories will proliferate. We'll see what the future holds.

Jon Thaler
jjt@uiuc.edu

Bohr's "Copenhagen Interpretation" (CI) is the orthodox version of Quantum Mechanics (QM). Why? Bohr debated Einstein on his last-ditch criticism of QM, the EPR paradox. Einstein lost, and Bell proved that he lost, thus Bohr and CI were vindicated. Readers of many popular physics books are left with this impression, and it was refreshing to see a more accurate rendition by Martin Gardner.

CI relies on Bohr's ideas of "complementarity" (or, more accurately, as Bell pointed out, "contradictariness"). CI and its offshoots lead one to the conclusion that there is no reality (i.e., Bohr threw out the classical

concept of truth), or that consciousness creates reality.

David Deutsch, a proponent of the Many Worlds Interpretation (MWI) alternative to CI critiques the latter in his book *The Fabric of Reality* (1997): "[According to CI], as for the unobserved events that interpolated between conscious observations, one was 'not permitted to ask' about them! How physicists, even during what was the heyday of positivism and instrumentalism, could accept such an insubstantial construction as the orthodox version of a fundamental theory [QM] is a question for historians."

Relativity and QM have long ago made us comfortable with abandoning common sense, but CI radically undermines the idea of objective reality. Bohmian Mechanics, which (as Gardner points out) Bell championed, offers one alternative to CI that does not rely on the (perhaps) extravagant solution of MWI: Gardner's setting the record straight on Bell and the EPR paradox is a service—one appropriate in a magazine for skeptics.

Patrick O'Hara
Seattle, Washington

Martin Gardner's "The Guided Wave Theory of Louis de Broglie and David Bohm" is a fine descriptive and explanatory essay on one of the most difficult and depressing areas of physics there is, quantum mechanics and its theories, and de Broglie and Bohm's courageous attempt to restore determinism and some sense of sanity into a field long given over to mystic contemplation and metaphysics. We see great scientists immersing themselves in nonscience for reasons that seem, in the case of Copenhagenism, to have more to do with the idealistic philosophic maunderings of Bishop Berkeley than the pursuit of reason, and in the case of "Many-Worlds" is simply insane. I cannot help thinking that insanity constitutes something of a drawback in scientific theorizing.

The guided wave theory therefore deserves more serious study and analysis than it has generally received from physicists. Copenhagenism has enjoyed cult status among them for the past seventy years and more, while the various flatulences of Many-Worlds has run a strong second.

The fact remains that the guided wave hypothesis is not a theory in the true, scientific meaning of the word. Like the Copenhagen Interpretation and Many-Worlds, GWT has no empirical evidence to support its claims to truth. It is speculation and embraces a mystical holism no less than the antic followers of Bohr and Heisenberg's theory cherish mass solipsism and those of Hugh Everett's are certifiable, if sincere, or, if not, are, in Russell's phrase, "frivolous in their insincerity." It is not surprising that a stubborn non-Mysterian like Einstein adopted a plague-on-all-your-houses approach to these quantum "theories."

Speculation is the first vital step a scientific idea must take, but if it stops there then it is useless. So far, GWT has carried a heavy burden of speculation on its slender shanks of empirical content. It needs a careful, scientific hard look, and Gardner is performing a real service to physics for bringing it to the attention of SI readers in the lucid way that he has.

Ralph Estling
Ilminster
Somerset, England

In the SI article I read: ". . . the late American physicist David Jacob Bohm (1917–1991)." Yet in the introduction to *Infinite Potential—The Life and Times of David Bohm* I read: "On the afternoon of October 27, 1992, David Bohm was at Birbeck College" and "Still, there were many paradoxes to Bohm's life." Perhaps his death was also paradoxical!

Benito Franqui
Orange, California

Martin Gardner responds:

I did not endorse Bohm's guided wave theory. On the contrary, I said I was not competent to evaluate it. My intent was to explain it as best I could, and call attention to an increasing number of top experts who are now taking it seriously.

The Feynman quotation was taken from page 207 of David Weeks's The Infamous Boundary. *Weeks had paraphrased. Here is the exact quotation, from Feynman's Red Books (Vol. III, Section 1–7):*

> *One might still like to ask: "How does it work? What is the machinery behind the law?" No one has found any machinery behind the law. No one can "explain" any more than we have just "explained." No one will give you any deeper representation of the situation. We have no ideas about a more basic mechanism from which these results can be reduced.*

Franqui is correct, Bohm died in 1992.

Mistrust and Concerns

In reading "Doomsday Fears at RHIC" (May/June 2000), I wondered if the author had not missed a significant source of the concern among the public—mistrust of the scientists—or at least of the major laboratories in their communities. Residents of Long Island have had to deal with several serious threats to their local environment caused by the carelessness of the Brookhaven National Laboratory (BNL) management, and the apparent lack of concern of the scientific staff. It is not hard to see how one would be skeptical of scientists from the laboratory claiming that their experiments will cause no harm, when previous experience indicates otherwise. The threats of the RHIC experiments may be nonexistent, but it is hard for the public to trust the statements of scientists or laboratory managers who have been wrong or untruthful about other threats to the environment in the past. In addition to educating the public about the real nature of their work, scientists need to be honest about their past mistakes, and make it clear that they share the concerns of their neighbors for a safe and healthy environment. And they need to make sure that their laboratories are operated in a manner that takes those concerns seriously.

Peter Dickinson
Huntington, New York

Reproducing the Shroud

The May/June issue of SI has a sad article on the extent to which paranormal ideas have become normal, especially in France. The author, Henri Broch, described "how to reproduce shrouds with all of the characteristics of the Turin shroud." I agree with him if we add, "as observed with the unaided eye," but I have written a paper now in press* that proves the bas-relief/daubing procedure produces an image that, at magnifications above about 500X, is very different from the Turin shroud. This means that the Turin "Shroud" could not have been done by that procedure and leaves the brush-painted "Shroud" as the only way to produce a "Shroud" image having all of its microscopically observed physical characteristics.

Both images are produced with paint pigments (red ochre and vermilion) but the pigments in the Turin Shroud images are well dispersed on the linen fibers almost entirely as aggregates of 1 to 5 individual submicron particles: on daubed/bas-relief images the pigment is dispersed in particle aggregates of

100 to 1000 (or more) pigment particles.

*I will send a reprint of this paper to anyone who requests it. Phone (312) 842-7100; Fax (312) 842-1078; e-mail: wmccrone@mcri.org.

Walter C. McCrone
McCrone Research Institute
Chicago, Illinois

We're Counting the Seconds

In regard to Robert Sheaffer's column "Apocalypse Lost" (May/June 2000), I was quite intrigued by the Year 2000 Institute's assertion that the clock on many UNIX systems will roll over on September 8, 2001. I was a member of my company's Y2K readiness committee and, as such, have become familiar with many date-related issues.

The UNIX operation system maintains its clock as a count of seconds from the start of what is called the system epoch, which is 1 January 1970 UTC, or Greenwich Mean Time. (The Foundation's phrase "Epoch proportions" may have been meant as a pun on this use of the word "epoch.") Many UNIX systems use a thirty-two bit signed integer to hold the count of seconds. For these systems, their clocks will roll over after 2,147,483,647 seconds (one less than 1 followed by 31 zeros in base two), which is early in the year 2038, considerably later than 2001.

I can only speculate how the Year 2000 Institute came up with a rollover date of September 8, 2001. I note that 1,000,000,000 seconds from the start of the UNIX epoch is, indeed, September 8 or 9, 2001, depending upon time zone. Of course, a base-10 value such as 1,000,000,000 is nothing special to binary computers. Could it be that somebody got confused on this point?

Roger Wells
Lacey, Washington

I find it amusing to learn from the Year 2000 Institute that UNIX systems use the decimal system for keeping track of time. All these years, I was lead to believe that they use the binary system.

The Institute's fascination with round numbers apparently knows no bounds. With the failure of the year 2000 to bring about global catastrophe, they apparently went looking for the next round number they could find that might offer some hope of calamity. Their expected failure occurs when the UNIX system timer rolls over to 1 billion seconds, which actually occurs on Sunday, September 9, 2001 at 1:46:40 UTC. Unfortunately for them, this event means as much to a computer as the planetary alignment of May 5, 2000, means to Earth.

Everyone who is familiar with the UNIX time format knows that the real time problem won't occur until mid-January 2038 when the signed 32-bit integer overflows. Hopefully by then, the timer will have switched to a 64-bit integer, allowing UNIX systems to keep track of time for the next 292 billion years. Regardless of the actual magnitude of the problem, it's a safe bet that it won't engender any of the hysteria that arose around the Year 2000. There will probably be more hysteria over June 6, 2006, than there will be over January 18 and 19, 2038.

David Cato
Houston, Texas

Belief Bucket?

I was disappointed in Deborah Frisch's Forum column, "Skeptical of Skepticism" (May/June 2000).

First, because the main question—"Why are there so few women skeptics?"—was never really addressed. I have two daughters. I'd like to know why there are so few women skeptics.

But mostly I was disappointed by this remark: "Many skeptics do not seem to realize that they have an equally strong desire for holistic and spiritual claims to be false."

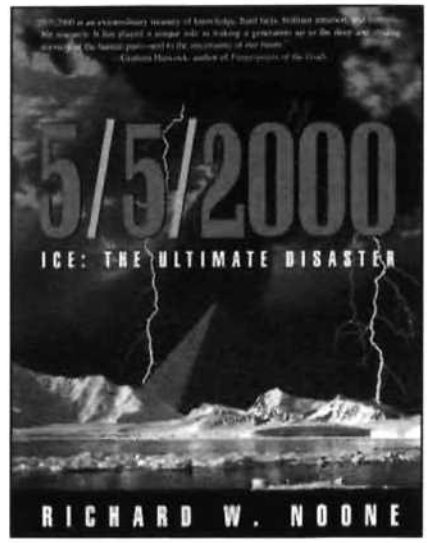
My god.

I, for one, didn't just reach into some belief bucket and happen to pull out "skepticism." I would love for there to be life after death. I would love to discover new ways to heal the human body. I would love to find out that holistic and spiritual claims are true.

But I'm an adult now, all grown up, and the fact that I want something to be true isn't enough to make it true.

Sure, there are young or otherwise immature skeptics who perhaps thrive on "being right." Just as there are immature people in all walks of life. But for most of us (I hope) skepticism isn't merely a matter of "being right," it's a matter of being honest with ourselves and facing the world as it is rather than as we would like it to be.

Steve Isaacson
Seattle, Washington



No One

Regarding your News and Comment critique of Richard Noone's book *5/5/2000* (SI May/June 2000) I couldn't help but be struck by how appropriate the author's name was. With a slight change of punctuation the review can be read: "No one believes that on May 5, 2000 . . . the Earth's axis will suddenly lurch out of position . . ." etc. Well, I trust no one believes it now!

C. Goodwin
London, U.K.

Prayer Works Best Before It Starts

Irwin and Jack Tessman (March/April 2000) take to task the literature on the therapeutic benefits of intercessory prayer. Although their criticisms are well argued, they overlooked one point, originally raised by N. Humphrey (Cambridge, U.K.), which is worth noticing. In the trial reported by Harris et al. (*Archives of Internal Medicine*, 159: 2273–2278, 1999) 484 patients admitted to the Coronary Care Unit were randomly allocated to the prayer group and 529 acted as controls. Twenty-three patients who were discharged from the hospital because they got better within the first day were excluded from the study. However, the number of patients who improved quickly was not equally distributed in the two groups: eighteen were from the "to be prayed for" group, and only five from the control group. This difference is highly significant (chi-square: $p<0.001$). This suggests one of two

alternative hypotheses: either prayer affects recovery even when it is only planned or the authors included patients with less severe ailments in the "to be prayed for" group than the control group.

Sergio Della-Sala
Aberdeen, U.K.

This letter was written before Nicholas Humphrey's brief Follow-Up column note on this topic appeared in the May/June 2000 SKEPTICAL INQUIRER.—Editor

Relativity Effects Not Illusions

I suspect that Ralph Estling, in his response, did not completely understand the point raised by Robert Johnson and Alasdair Urquhart regarding his summary of special relativity (Letters to the Editor, May/June 2000). They were not saying that the statement quoted by Johnson "was a bit too summary," as Estling suggests; they were saying that, while true, it had nothing to do with special relativity at all. Estling's statement follows simply from the fact that if you stand closer to a source of waves, the waves reach you sooner, and that was well-known and taken into account long before Einstein ever appeared. If he had wanted to refer to special relativity, Estling would have had to say "Two events are determined to be simultaneous by one observer who has taken into account the finite time that signals from the events took to reach him; but another observer moving with respect to the first will determine that the events did not occur simultaneously, even taking into account finite signal speeds." This is the point Einstein makes with his train-hit-by-lightning thought experiment; this is also the point made by Johnson and Urquhart. The relative positions of the two observers (being at a midpoint or not) are completely irrelevant; relative velocity is what matters.

Consider Einstein's thought experiment again. A train car moves along at constant speed, one observer stands on the embankment. Lightning strikes the two ends of the car. The train car observer records the times at which the flashes reach him, and he measures his distance from each end of the car; since he knows the speed of light, he can calculate the times at which the flashes occurred. The embankment observer also records the times at which the flashes reach her, and she measures her distance from the location of each flash; then she calculate the time at which each flash happened. Einstein shows that if one observer finds the flashes were simultaneous, the other will find that they weren't. (He puts the boxcar observer at the midpoint for convenience only; Einstein's argument goes through no matter where the observer stands.) This is the effect Einstein, Johnson, and Urquhart are referring to, and it is not the effect Estling describes in his summary. Estling is talking about an observer *seeing* one event before another because he's closer to it; Einstein is talking about an observer calculating that one event *happened* before another, explicitly taking into account that the events did not happen at the moments when they were seen.

One must take care when saying that in special relativity different observers see events happen in different ways, because this easily gives the false impression that relativistic effects are just illusions of some kind, like mistakenly believing that a tall object is very short because it's far away and thus looks short.

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Ethical Culture Movement

In his letter in the May/June 2000 issue, Richard B. King writes "science . . . needs to be supplemented with something that gives meaning to our lives . . . there remains a core wisdom to religion, . . . ethical teachings, . . .compassion, mindfulness, and meditation." While I, and I'm sure many of your readers, could take exception to this, citing an almost endless list of historical examples of religious violations of those core values, I agree with Mr. King that those should be religion's core values. In addition, I'd suggest that the real reason behind the surge in religious membership is the sense of community that regular attendance at religious services gives.

As our world gets more and more fragmented by relocation for jobs, divorce, etc., it's nice and comforting to belong to a community that shares your core beliefs. Time and again I've heard rationalists, humanists, agnostics, atheists, and those disillusioned with traditional dogmatic religions lament their lack of just such a community. Well, lament no more, for the answer may be close at hand.

There is an organization that fills the function of a religion (weddings, memorial services, baby naming, regular meetings, pastoral care, community support, Sunday school for children, etc.) while remaining free from dogma. An organization that not only strives to aid the development of an individuals' own ethical beliefs, but encourages ethical action as well. It's called the Ethical Culture Movement. It was started over a hundred years ago, and if you live in one of the many cities that have an Ethical Society, it may be what you're looking for. Five years ago, I started attending the Ethical Society of St. Louis just to see what it was about, and next month I become the President of the Board. Search the Web for "ethical society" if you want more information.

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Facile Sorting of Humans

Letters about "Race and IQ" (May/June 2000) show confusion about race, which is a social construct based on physical appearance, especially skin color, and the function of genes. Of the tens of thousands of genes being catalogued, very few affect physical appearance. Some have higher frequencies in certain geographic regions, but distributions are not usually parallel and do no permit the facile sorting of human populations into distinctive sets. I highly recommend the definitive work on this topic, *The History and Geography of Human Genes* by Cavalli-Sforza, et al. (1994, Princeton University Press).

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The letters column is a forum for views on matters raised in previous issues. Letters should be no more than 225 words. Due to the volume of letters not all can be published. Address letters to Letters to the Editor, SKEPTICAL INQUIRER. Send by mail to 944 Deer Dr. NE, Albuquerque, NM 87122; by fax to 505-828-2080; or by e-mail to letters@csicop.org (include name and address).

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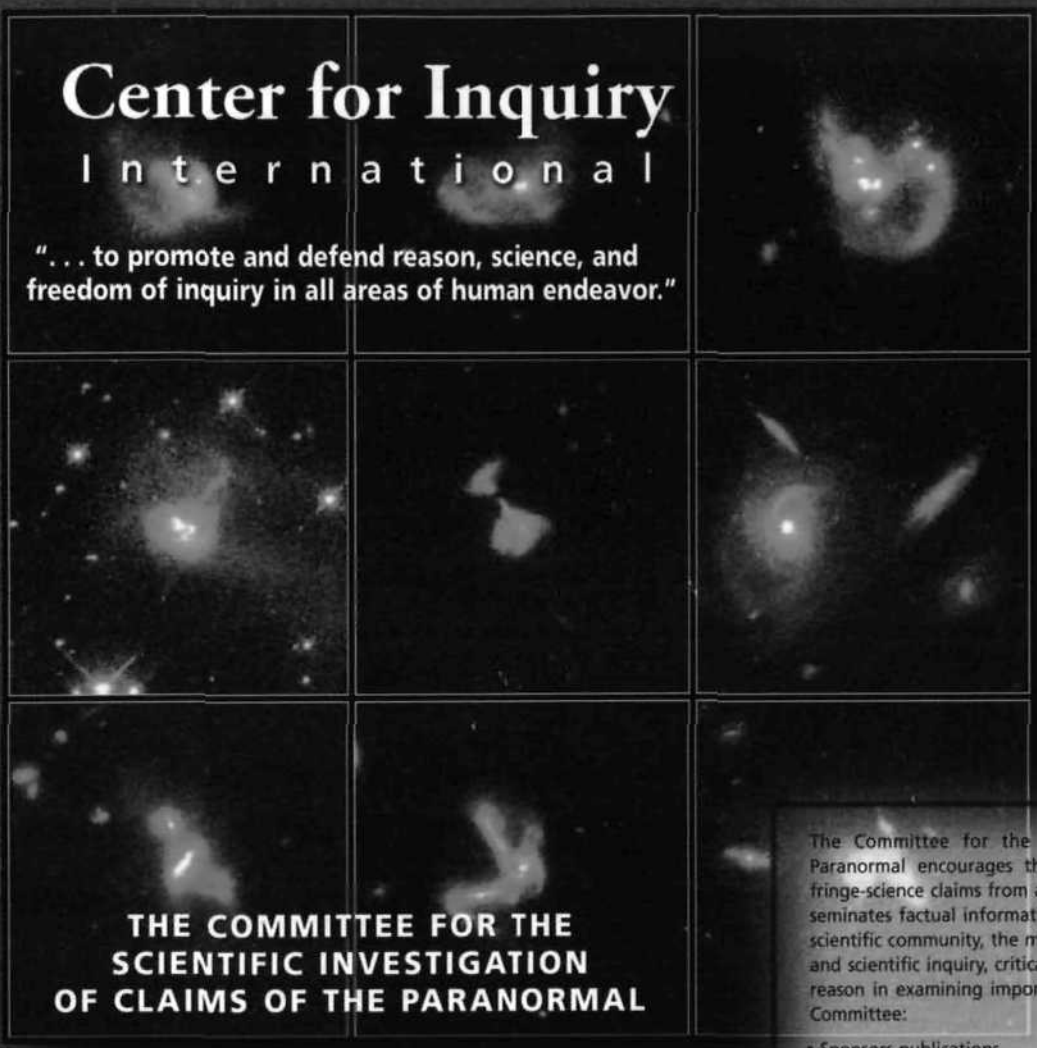

THE COMMITTEE FOR THE SCIENTIFIC INVESTIGATION OF CLAIMS OF THE PARANORMAL

Multiple Galaxy Collisions Surprise Hubble Astronomers

Astronomers have interpreted the oddly shaped objects in these NASA Hubble Space Telescope snapshots as strong visual evidence for multiple galaxies crashing into each other. These smashups create a tangled clump of matter and trigger a burst of new stars.

The photo at the upper right, for example, appears to possess the nuclei of several galaxies. In another picture (bottom row, center), a three-galaxy collision has ripped several streamers of stars from their homes. The galaxies are converging into one central spot.

Photo credit: NASA, Kirk Borne (Raytheon and NASA Goddard Space Flight Center, Greenbelt, MD), Luis Colina (Instituto de Fisica de Cantabria, Spain), and Howard Bushouse and Ray Lucas (Space Telescope Science Institute, Baltimore, MD)

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